TABLE OF CONTENTS

CONFIDENTIAL

MAGNETOMETER SURVEY

PELLY MINERAL CLAIMS

WHITEHORSE MINING DISTRICT

YUKON TERRITORY

INTRODUCTION

A magnetometer survey was carried out on the Pelly group of mineral claims for Potluck Exploration Limited by the writer, Fred J. Hemsworth. The surveying and the cutting of picket lines was done between July 23rd and September 20th, 1954, while the instrument work was completed in the first three weeks of September.

This report and accompanying maps are submitted in lieu of assessment work for one year on the Pelly group.

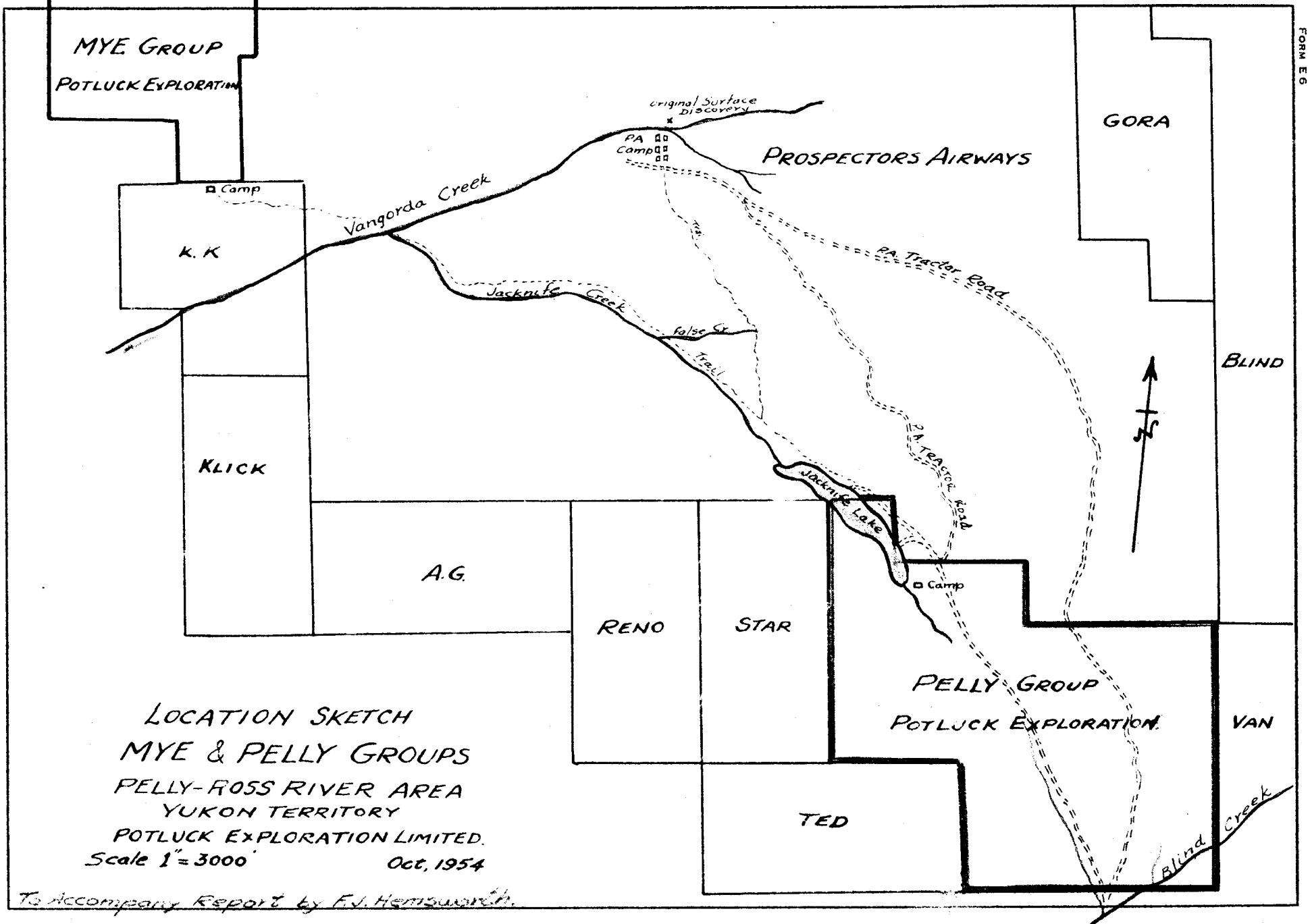
LOCATION AND ACCESS

The Pelly group consists of 24 claims situated close to Jacknife (Scimitar) Lake in the Pelly-Ross River area, Yukon Territory, 120 miles northeast from Whitehorse. All supplies and personnel were flown in from Whitehorse by Whitehorse Flying Services Limited using Jacknife Lake for aircraft landings.

The names of the claims and record numbers are as follows:

Pelly No. 1 Group (Form E No. W/H3810)

Name	Record Number
Pelly No. 1	66883
" " 18	66900
" " 19	66901
" " 20	66902
" " 21	66903
" " 22	66904
" " 23	66905
" " 24	66906


MYE GROUP
POTLUCK EXPLORATION
Original Surface Discovery
PA Camp
PROSPECTORS AIRWAYS
GORA
Camp
Vangorda Creek
K. K
Jackknife Creek
False Cr.
Trail
PA Tractor Road
BLIND
KLICK
PA Tractor Road
Jackknife Lake
Camp
A.G.
RENO
STAR
PELLY GROUP
POTLUCK EXPLORATION
VAN
TED
Blind Creek
LOCATION SKETCH
MYE & PELLY GROUPS
PELLY-ROSS RIVER AREA
YUKON TERRITORY
POTLUCK EXPLORATION LIMITED.
Scale 1"=3000'
Oct, 1954
To Accompany Report by F.V. Hemsworth.

FORM E 6

Pelly No. 2 Group (No. W/H3829)

Name	Record Number
Pelly No. 2	66884
" " 3	66885
" " 4	66886
" " 5	66887
" " 6	66888
" " 7	66889
" " 8	66890
" " 9	66891
" " 10	66892
" " 11	66893
" " 12	66894
" " 13	66895
" " 14	66896
" " 15	66897
" " 16	66898
" " 17	66899

The claims were staked September 18th, 1953 and recorded September 25th, 1953. They are registered in the name of K.J. Springer.

The group lies southeast of Prospectors Airways holdings, where important base metal mineralization was discovered in 1953. A sketch showing the location of the group relative to Prospectors Airways is attached.

TOPOGRAPHY

The Pelly claims cover part of the Jacknife Lake valley and the north slopes of the Blind Creek valley. Both these water sytems are north tributaries of the Pelly River.

The relief is comparatively moderate. The elevation of Jacknife Lake is 3,500 feet above sea level and the hills around it rise to less than 1,000 feet above the lake level.

The north and east sections are burn where forest fires have depradated the country in recent years. The burned-out areas are a mass of small windfalls and willow thickets which hampered the progress of the work. In the south and west portions of the claims small forests of spruce and balsam are general. The timber grows to a maximum size of about one foot in diameter and would be suitable for mine props, firewood, or log cabin construction.

REASONS FOR MAGNETOMETER SURVEY

The decision to undertake the magnetometer work was made after a reconnaissance of the topography of Pelly claims, and after a study of the successful results obtained by Prospectors Airways with magnetic methods of geophysical prospecting.

Less than three percent of the surface area of the Pelly claims is outcrop or drift-free rock surface. The few rock outcrops gave no indication of the possible underground ore potential.

On Prospectors Airways adjoining ground, several methods of geophysical surveying had been tried, and the most dependable results had been obtained by magnetic methods. The ore is a fine-grained mixture of lead-copper-zinc-iron sulphides carrying some silver. Magnetite and the magnetic-type pyrrhotite are generally associated with the ore in varying amounts. To date, all magnetic anomolies that have been diamond-drilled have proved ore-bearing. An interesting feature of Prospectors Airways drill results is that although all anomolies investigated have yielded orebodies, the best ore sections do not necessarily occur at the high points of magnetometer readings but are more likely to lie around the periphery of the anomoly.

LAYOUT

The claims were surveyed with a Brunton compass and linen tape. This survey established the position of roads, trails, lakes, creeks and claim boundaries. The survey was calculated and a rough plan prepared in the field. Using the claim location lines as baselines, stations were established at 400-foot horizontal intervals, and picket lines turned off at right angles at the baseline stations. The picket lines were cut out for 1500 feet east and west of the baselines, and magnetometer stations marked off at 200-foot intervals. All the 24 claims were completed in this fashion except the northwest portions of Pelly Nos. 18 and 19.

INSTRUMENT, PROCEDURE AND CORRECTIONS

A Wolfson magnetometer was rented from Sharpe Instruments Limited of Toronto and shipped by air express to Jacknife Lake. This instrument is a precision magnetic field balance measuring the vertical component of the earth's magnetic field. It has a sensitivity of 23.2 gammas per scale division and an intensity range of 0-2,200 gammas. This range may be increased up to 15,000 gammas by the use of auxiliary magnets. The instrument was more conveniently operated by an engineer and a helper because it had a separate compass which had to be mounted and removed before each reading. Having to pass the instrument head and compass back and forth at each set up was a cumbersome operation, and has been eliminated in more recent models.

The magnetometer was found to be out of adjustment upon arrival at camp. This was due to the difference in latitude or to travel shock. The head was removed and the latitude weight adjusted on the spindle until the scale was brought back into the field of vision.

A standard or test station was established near the camp and readings were taken before and after each day's survey. Two types of corrections were made on all field readings; corrections for

changes in time during the day, (diurnal), and from day to day. This served to reduce all stations to the values they would have had if measured simultaneously.

The diurnal correction standard was obtained by setting up on the test station and taking readings every hour.

Table of Diurnal Readings - Sept. 19, 1954

Time	Scale Reading	Temperature
8 a.m.	10.1	-4° C
9 "	8.7	-1° "
10 "	8.0	0° "
11 "	6.2	0° "
12 "	5.4	2° "
1 p.m.	8.9	1° "
2 "	9.7	1° "
3 "	9.9	1° "
4 "	10.2	1° "
5 "	7.0	0° "

The above readings were plotted on a graph and an arbitrary line drawn through the reading 8.0 at 10 a.m. Plus or minus corrections were then made on all readings based on the time the reading was taken.

Day to day corrections were made to reduce the level of one day's readings to that of the previous day. Besides the test station average, whenever possible two of the previous days stations were repeated to determine the day to day correction.

The corrected readings have been calculated to gammas and plotted on a plan of the claims to a scale of 500 feet to one inch. Magnetic intensity contours are shown with contour intervals of 300 gammas.

GEOLOGY

In the field it was only possible to differentiate between the two main rock types, the basic igneous rocks and the older sedimentaries. There are few outcrops and the rocks are metamporphosed and highly altered.

The older sedimentaries consist of sericite schist, quartzite, chlorite schist, and recrystallized limestone. They are prevailingly schistose, grey or green in color, and generally flat-dipping. The sericite schist is probably a micaceous quartzite. It is grey, highly metamorphosed, and constitutes the bulk of the sediments outcropping on the Pelly group. It is noteworthy that orebodies at Prospectors Airways are found in similar flat-lying sericite schists.

In memoir 200 "A Reconnaissance of the Pelly River", J.R. Johnston classifies the sediments as Palaeozoic and/or Precambrian, and the igneous rocks as Mesozoic. He states "The basic igneous rocks, consisting of a complex of volcanics and intrusives, occur in elongate northwest-trending bodies, overlying and infolded with, or intrusive into the Palaeozoic (?) strata, and members of the Yukon group. All these basic rocks are altered to greenstones."

The area is blanketed by a heavy mantle of overburden that covers most of the bedrock. The accumulations are deepest in the valleys and consist of glacial silt with rounded boulders of granite, sand and gravel, and an overlying thin layer of volcanic ash.

A geological map is included with this report. It shows the known geology from outcrops in solid colors and the geophysically inferred in fainter colors.

RESULTS AND CONCLUSIONS

Two large anomolies and three small anomolies were found by the magnetometer survey. The anomolies show up on the accompanying magnetometer plan as concentrations of magnetic contours. They line up on a general north 50 degrees west strike along a line from Pelly No. 17 to Pelly No. 20 claim.

In addition there are a few sporadic high readings that are unconformable. They may represent small orebodies at greater depths or may be due to a boss of ultra basic intrusive carrying small amounts of magnetite.

The size of the magnetic bodies will be in direct ratio to the size of the anomolies, and their distance from the surface in an inverse ratio to the strength in gammas.

The anomolies must represent one or a combination of the following underlying conditions:

1. Gabbro with disseminated magnetite
2. Heavy sulphides of pyrrhotite
3. Some ore sulphidesand magnetite
4. Heavy ore sulphides and pyrrhotite

From the experience of Prospectors Airways, it may be reasonably assured that the anomolies represent the surface manifestation of underlying orebodies of lead-copper-zinc sulphides.

RECOMMENDATION

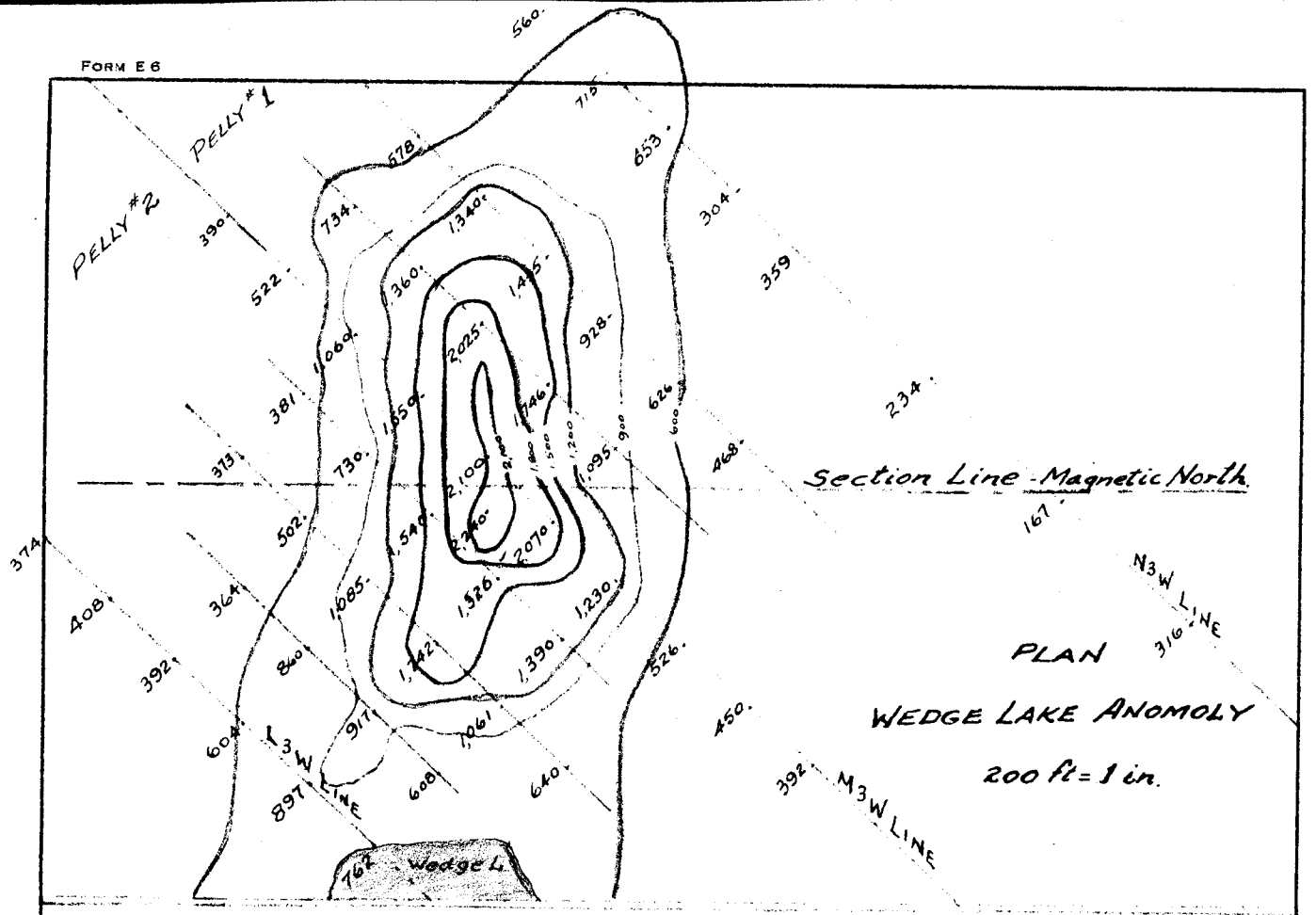
It is recommended that the two larger anomolies, found by the magnetic survey of the Pelly claims, be investigated further by diamond drilling. From the experience on the adjoining ground it is logical to expect that orebodies will be found at these locations.

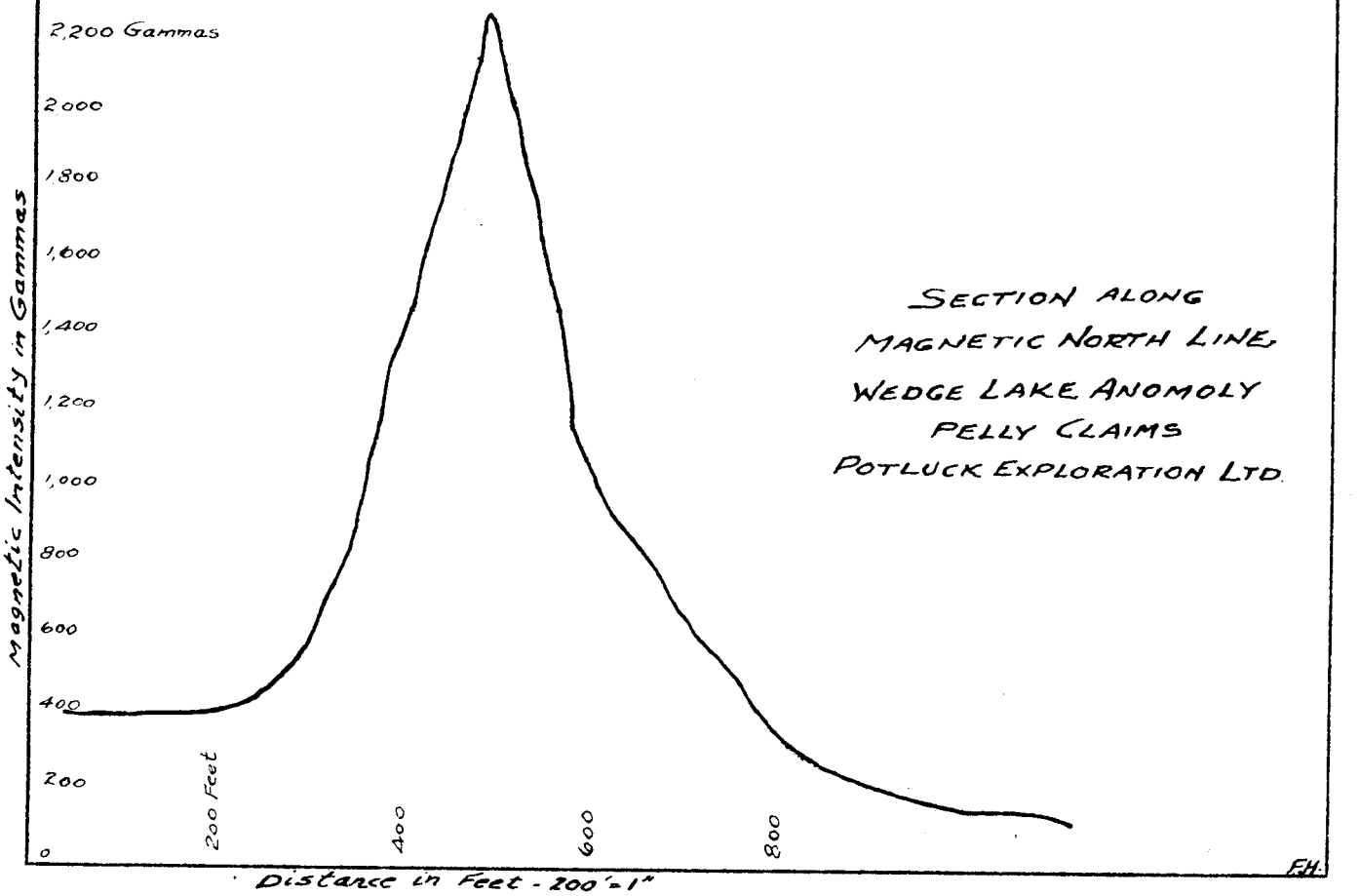
Respectfully submitted,

October, 1954.

Fred J. Hemsworth, P.Eng.

FORM E 6





SECTION ALONG
MAGNETIC NORTH LINE,
WEDGE LAKE ANOMOLY
PELLY CLAIMS
POTLUCK EXPLORATION LTD.

MAGNETOMETER SURVEY.

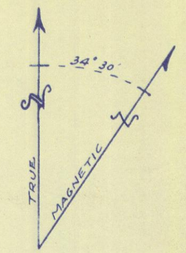
PELLY MINERAL CLAIMS

PELLY-ROSS RIVER AREA – Y.T.

POTLUCK EXPLORATION LTD.

From Brunton & Tape Surveys

Scale 1" = 500' Oct, 1954



PROSPECTORS AIRWAYS CLAIMS

JACK-KNIFE LAKE

WEDGE LAKE

TRACTOR ROAD

BLIND CREEK

CONFIDENTIAL

LEGEND

- ROADS
- TRAILS
- CLAIM POSTS 0
- MAG LINES
- SURVEYED INTERVALS A F4
- MAGNETOMETER VALUES 318 · GAMMAS
- MAGNETIC CONTOURS
  - 300 GAMMAS — 300
  - 600 GAMMAS — 600
  - 900 GAMMAS — 900
  - 1,200 GAMMAS — 1,200
  - 1,500 GAMMAS — 1,500
  - 1,800 GAMMAS — 1,800
  - 2,100 GAMMAS — 2,100

FH

GEOLOGY

PELLY MINERAL CLAIMS

PELLY-ROSS RIVER AREA – Y. T.

POTLUCK EXPLORATION LTD.

GEOLOGIC BOUNDARIES FROM OUTCROPS ON SURVEYED LINES & FROM MAGNETOMETER WORK.

Scale 1"= 500' Oct. 1954

34° 30'

TRUE

MAGNETIC

JACK-KNIFE LAKE

WEDGE LAKE

PELLY #1

PELLY #2

PELLY #3

PELLY #4

PELLY #5

PELLY #6

PELLY #7

PELLY #8

PELLY #9

PELLY #10

PELLY #11

PELLY #12

PELLY #13

PELLY #14

PELLY #15

PELLY #16

PELLY #17

PELLY #18

PELLY #19

PELLY #20

PELLY #21

PELLY #22

PELLY #23

PELLY #24

Trace Chalcopyrite & Copper Carbonates

Diorite Float

BLIND CREEK

TRAILOR ROAD

LEGEND

- ROADS
- TRAILS
- CLAIM POSTS 0
- OUTCROP
- GEOLOGIC BOUNDARY ASSUMED FROM MAGNETOMETER READINGS

MESOZOIC VOLCANICS & INTRUSIVES

Andesite, Diorite Diabase, Gabbro

PALÆOZOIC SEDIMENTS

Sericite Schist, Chlorite Schist, Limestone