570

REPORT OF GEOPHYSICAL SURVEY

SHAN CLAIM GROUP

(12019-12038M)

LIARD MINING DIVISION

By G.W.H. Norman, P. Eng.

August-September, 1964.

104B/10W

CONTENTS

REPORT OF GEOPHYSICAL SURVEY

SHAN CLAIM GROUP (12019-12038M)

LIARD MINING DIVISION

by G.W.H. Norman, P. Eng.,

August 21st to September 9th, 1964.

INTRODUCTION

This report presents the results of an Airborne Magnetometer Survey of the Shan group of Claims. Rough topography precluded the use of fixed wing aircraft and accordingly the work was done with a varian type magnetometer mounted in a Bell G2 helicopter.

LOCATION

The Shan claim group is two miles south of Iskut river and 37 miles east of the Stikine-Iskut river junction. The claims cover the ridge that lies directly east of Shippaker creek and between the creek and Iskut river.

TYPE OF SURVEY AND EQUIPMENT

The problem of carrying out airborne work in an area with a local relief of 2500 feet or more and valley slopes ranging up to 40 degrees can be resolved to some extent by contour flying with lines at successive constant elevations.

The lines on the Shan group were flown at 500 foot contour intervals starting at an elevation of 4500 feet. The lines averaged 1000 feet apart and were flown at 300 feet above the ground.

The Varian magnetometer used on the survey employs the effect of the earth's magnetic field on the orientation of atomic nuclei. Atomic nuclei are protons or combinations of protons of which the simplest are the protons of hydrogen atoms. Kerosene provides an adequate source of hydrogen atoms for Varian type magnetometers. The kerosene is placed in a cylindrical container and towed 50 feet below the aircraft. It is thus removed from local disturbing forces in the aircraft. The container is surrounded by a coil through which at one second intervals a current is forced to flow. When the current in the coil is cut off the hydrogen protons are oriented in space by the controlling forces of the earth's magnetic field. When the current flows through the coil a strong local magnetic field is set up to act on the hydrogen nuclei. This local field is sufficient to completely counteract the earth's magnetic field. The effect on the protons when the current is cut off and they reconform to the earth's magnetic field provides a means, with appropriate electronic instrumentation of measuring the strength of the earth's magnetic field.

The instrument used in 1964 is coupled with a continuous recording device provided with a metric chart 12 centimeters wide travelling either one or four feet per second as required. Readings are taken by the instrument at intervals one second apart when the current in the coil is cut off. In an aircraft

travelling at the average speed 45 miles per hour used on the survey successive readings are 66 feet apart.

The scale of the metric chart used was 100 gammas per centimeter which allows for changes of 1000 gammas across the width of the chart. When the differences in reading exceed 1000 gammas the recorder automatically steps up or down to change the datum or centre line of the chart by 500 gammas.

The instrument measures the total intensity of the earth's field in gammas. The average total field is approximately 57,000 gammas.

WORK PERFORMED

The airborne survey was carried out with the magnetometer mounted in a Bell G2 Helicopter operated under charter from Klondike Helicopters Ltd., Whitehorse, Yukon. The machine used, No. C F L I M, was flown by pilot, John King, who was responsible for keeping the aircraft at a constant elevation during each flight line. The magnetometer was operated by Gordon Gutrath B. Sc. U.B.C. 1960 who has four years experience with airborne magnetic surveys and airborne magnetometers.

Installation of the magnetometer in the Helicopter was supervised by George McLaughlin, formerly with McPhar Geophysics Ltd. of Ontario and now on the geophysical staff of Newmont Exploration Ltd. at Danbury, Connecticut. The installation and a series of tests of performance were made by McLaughlin at Telegraph Creek, B. C. in June 1964.

A total of 7 lines which totalled about 600,000 feet were flown on August 21 by Gordon Gutrath. The magnetometer charts were checked and edited by Gutrath August 22-23. G.W.H. Norman spent four days, August 9-12, on the ground in preparation for the survey and six days, August 28-31, September 4-5, preparing the map and report on the work. Costs shown in Part B

In order to plot the flight lines in relation to the claim group, use was made of a series of small ponds on the claims. The claims were checked with a ground magnetometer before making the airborne survey and for this purpose lines on the ground at 600 foot intervals were blazed and surveyed. The small ponds were tied in on these lines which fixed the position of the ponds to the claims. The ponds formed recognizable features from the air which were used as points of reference. The ponds and stream crossings were indicated on the magnetic charts by fiducal marks and provided a key to plotting the lines.

RESULTS

The results of the airborne magnetometer work are shown on the accompanying map in the folder of this report. Two magnetic anomalies were located during the survey. The general background of the region is approximately 57700 gammas. In the anomaly areas values rising 1050 and 1350 gammas above average were recorded.

The 1050 gammas anomaly and associated negative anomaly along Snippaker creek can be explained by a recent or tertiary basalt lava that flowed down Snippaker creek probably from a

volcano near the headwaters of the creek.

The 1350 gamma anomaly on the Shan claims is produced by a magnetic skarn along the margin of a limestone bed. The limestone bed is shown on the geological map 9-1957, Stikine River Area, by the geological Survey of Canada where it is indicated to be a small inclusion in a large granite area.

G. W. H. Norman, P. Eng.

September 8, 1964.

M1

Iskut River

Snippaker Creek

RECENT BASALT

SHAN GROUP

Line 6 E(2000')

Line 5 W(2500')

Line 4 E(3000')

Line 3 W(3500')

Line 2 E(4000')

Line 1 W(4500')

N

AIRBORNE MAGNETIC SURVEY OF SHAN CLAIM GROUP

12019 - 12038 M

LIARD MINING DIVISION

AUGUST 1964

LEGEND

Isogams 100 gamma interval — 900 —

Flight Lines with numbered Fiducials · 21 22 ·

Note: For total intensity add 57,000 gammas

SCALE: 1" = 1320'

September 4, 1964

G.W.H. Norman