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CANEX AERIAL EXPLORATION LTD.

REPORT ON GEOLOGICAL SURVEY OF THE BETTY LOU AND LOU GROUPS OF MINERAL CLAIMS, PROMONTORY HILL, MERRITT, B. C. SEPTEMBER 16 TO OCTOBER 20, 1959

MINERAL CLAIMS: BETTY LOU GROUP:

BETTY LOU Nos. 1-14 M.C.
BETTY LOU Nos. 17 & 18 M.C. and
BETTY LOU Nos. 1-4 Fracs.

LOU GROUP:

LOU Nos. 19-26 M.C. and
BETTY LOU No. 5 Frac.

LOCATION: Ten miles north-west of Merritt, B.C.
(58° N - 120° W)

GEOLOGICAL SURVEY BY:

Clive W. Ball

3 November 1959

CONTENTS

I INTRODUCTION

Field mapping was carried out from 16 September to 20 October 1959 in order to map the formations, rock types and geological structures on Promontory Hill where Canex Aerial Exploration Ltd. holds a total of 29 claims in the Betty Lou and Lou groups. All mapping is on a scale of 400 feet to 1 inch, the scale adopted for the contour maps prepared for the Company by Photographic Survey Corporation Ltd. earlier this year. The writer was assisted by S. G. Christie, Veteran prospector, who acted as linesman and scout. The geological mapping was conducted by pace and compass method and was tied in to chain and compass base-lines and prominent landmarks. Great care was taken in identifying rock types and geological structure.

A total of 19 thin-sections are being prepared for petrographic analysis and the results of the study will be utilized in the near future.

II LOCATION AND ACCESS

The claims form a solid block on Promontory Hill, about 10 miles north-west of Merritt. Access from the Merritt-Spences Bridge Highway is via Lower Nicola. A steep winding mountain road extends from Lower Nicola, a distance of 8 miles up Promontory Hill to the summit at 5,688 feet above sea level. A Forestry lookout tower and a micro-wave station are outstanding landmarks on the summit. The terrain can best be described as moderately rugged with some gentle slopes and benches. Vegetation is scattered on the south and east facing slopes (ponderosa pine, lodge pole pine, balsam, etc.) while on the north and north-west facing slopes old burn areas are now covered with windfall and jackpine. The stream beds are for the most part dry except in the vicinity of springs. Most of the surveying was done between elevations ranging from 3,500 feet to 5,688 feet above sea level.

A large number of jeep roads are available to give easy access to practically every sector of Promontory Hill.

III REGIONAL GEOLOGY

The regional geology of the area is described in G.S.C. Memoir No. 249, Geology and Mineral Deposits of Nicola Map Area, British Columbia, by W. E. Cockfield, 1948. The geological map accompanying the above report shows Nicola Group beds of Upper Triassic age consisting of greenstone, andesite, basalt, agglomerate breccia, tuff and minor argillite, limestone and conglomerate. These beds are overlain stratigraphically by the Kingsvale Group of Lower Cretaceous age and consisting of rhyolite, andesite and basalt; associated tuffs, breccias and agglomerates; arkose, and conglomerate.

Intruding the Nicola Group but presumably older than the Kingsvale are the diorite and related intrusive rocks which are part of the Coast intrusions.

Small copper deposits were known in the area at the time of Dr. Cockfield's mapping but none of these were considered of any size prior to the discovery of the Craigmont ore body which was completely covered by overburden.

As Dr. Cockfield stated in his descriptive notes, copper deposits have been discovered at many places in the plutonic rocks west of Guichon Creek and many veins and disseminations of copper minerals have been found in the rocks of the Nicola Group.

During the summer of 1959, the British Columbia Department of Mines mapped the geology of Promontory Hill on a scale of 1,000 feet to 1 inch and the writer would like to have the opportunity of discussing the results with Dr. M. Carr who supervised the mapping.

IV GEOLOGY OF BETTY LOU AND LOU MINERAL CLAIMS

The Betty Lou and Lou mineral claims are covered to a large extent by soil and overburden. The amount of overburden is probably in excess of 80 percent, leaving less than 20 percent of outcrops in the area of the claims. On certain claims, however, the amount of outcrop is less than 5 percent. It is, therefore, difficult to follow a bed or outcrop for any great distance. Correlation is thus exceedingly difficult and in general the tracing of indicated marker beds does not appear to be practical.

IV GEOLOGY OF BETTY LOU AND LOU MINERAL CLAIMS (Cont'd)

As shown on the map, andesite tuff is the commonest rock type exposed on the mineral claims. The pyro-clastic character is readily apparent when the rock is observed on weathered surfaces. The enclosed fragments are usually sub-angular to rounded and up to 1/4 inch across. One variation is sufficiently coarse as to be classed as agglomerate.

A rather special variant is the "quartz-eye" tuff which contains minute ovoids of quartz, about 1/32 inch across, and fragments of chert. Inter-bedded with the tuff are minor bands of indurated shale. These are usually banded and quite cherty. They provide useful beds for reliable strike and dip observations.

Limey tuffs have been mapped and these are generally considered favourable for copper mineralisation. For the most part they are andesitic in composition. Rhyolite tuff outcrops have been mapped but they have not been found as very extensive beds. Likewise, andesite flows appear to be very limited.

Limestone outcrops on the summit of Promontory Hill, and it has been traced westwards from the Forestry lookout. A large number of thin limestone beds occur, inter-bedded with the andesite and andesite tuff beds and also with the graywacke and grit conglomerates. Many of the limestone beds are no more than 30 feet thick but in places they range up to 60 feet thick as in the prominent band that extends westwards from the Forestry lookout.

Graywacke and felspathic grits are shown in the central portion of the claims. Limey grits have also been mapped, for example, in the vicinity of the radar towers at the micro-wave station where the beds are sharply folded.

Quartzite conglomerate and grit conglomerate are of limited extent and occur in association with the graywacke and felspathic grits.

Quartz-felspar porphyry is quite prominent on Betty Lou Nos. 4 and 6 mineral claims where two tongues are shown converging to the eastwards. Between these two tongues we find dacite, which may be a siliceous felspathic grit.

IV GEOLOGY OF BETTY LOU AND LOU MINERAL CLAIMS (Cont'd)

Diorite outcrops on the Betty Lou Nos. 12, 13 and 14 mineral claims. The impression was gained in the field that the diorite itself has been formed by dioritization of andesite tuff or felspathic grits. Such a process of alteration could easily be accomplished by diffusion, chemical reconstitution and re-crystallization.

V GEOLOGICAL STRUCTURE

Folding was observed in the field, especially where limestone beds outcrop, for example, on Lou No. 24 mineral claim and on Betty Lou No. 11 mineral claim. In addition, dip reversals shown on the accompanying 400 scale map suggest intense folding within the andesite tuff beds and related volcanics.

Although the fault pattern is quite complicated, the following systems are discernable:

1. North 50 degrees East System. This system is one of great importance because the writer believes it is one of normal faults whereby the sedimentary and volcanic rocks have been dropped down between the Guichon granite mass on the south-east and the diorite on the north-west, bordering on the north-east corner of Indian Reservation No. 9

2. North-west System (Strike 315 degrees)

3. North 20 degrees east to north 15 degrees west.

All of the above fault systems are believed to be normal (tension) faults. Attitude or dip of the fault planes is not known but they are all probably steeply dipping. Displacement is not known but could be quite considerable.

The interpretation of the faults is based entirely on the study of air photographs in conjunction with a consideration of natural topographic features such as escarpments, stream patterns, alignment of topographic breaks with small lakes and springs. Direct confirmation from field evidence is not available.

VI ECONOMICS

Structurally, the area is regarded as an extension of the Craigmont copper-iron zone in which limey tuffs, limestone and garnet skarn comprise the host rocks with graywacke, grits and argillites, also favourable for replacement by the mineralizing agencies. All of the above, with the exception of the garnet skarn, are exposed on the Betty Lou and Lou mineral claims.

No ore minerals are known to occur on the latter claims, although small quartz veins containing bornite have been reported from the site of the micro-wave station on Promontory Hill.

Epidote alteration, lime alteration (carbonatization) and brecciation are regarded as favourable signs which herald the localization of the copper mineralization at Craigmont. Epidote alteration is intense in the andesite tuff on Lou No. 25 mineral claim.

In general, it is considered that the ground described in this report is favourable for copper mineralization. Additional work in the form of detailed geological mapping, geophysical surveying and diamond drilling is recommended in order to thoroughly test the ground.

VII CONCLUSIONS AND RECOMMENDATIONS

The Nicola Group beds are well represented on the ground covered by the Betty Lou and Lou Groups of mineral claims.

Quartz felspar porphyry and dacite have been mapped in the field, in addition to rhyolite tuff and minor andesite. Nevertheless, the predominant rock type is andesite tuff. Additional rock types which were mapped comprise limestone, limey tuff, "quartz-eye" tuff, graywacke, felspathic grit and quartzite conglomerate. Locally, indurated shale and cherty argillites are useful indicators, but cannot be traced for any great distance along strike.

In the area of the claims, the amount of outcrop is less than 20 percent by area and in large sectors is probably less than 5 percent. This tends to make mapping and correlation of possible marker beds difficult and unreliable.

VII CONCLUSIONS AND RECOMMENDATIONS (Cont'd)

The two diagrammatic cross-sections accompanying the report show folding which is quite pronounced.

From a study of air photographs, the writer has interpreted a fault pattern and the main volcanic and sedimentary beds on Promontory Hill are believed to lie in a down-faulted block bounded on the south-east by granite of the Guichon batholith and on the north-west by dioritic rocks.

Many of the ideas expressed in the report are conjectural and perhaps speculative. However, the main intent is to express in some manner the general structural pattern which may be used as a guide for planning future work of a more detailed nature.

Further geological mapping is warranted and this should be followed by a ground magnetometer survey using an Askania Torsion magnetometer Gfz which reads directly in gammas. It would also be advisable to run an electro-magnetic survey. Any anomalies which cannot be readily explained should be tested by surface stripping or diamond drilling.

Clive W. Ball.

Clive W. Ball
Chief Geologist

CWB/mg
Vancouver, B.C.
3 November 1959

C. W. Ball has M.Sc. from Queensland University 1938, plus 18 years practical experience. He is Chief Geologist for Canadian Exploration Ltd. and is fully qualified to do the work covered by this report.

J. A. Mitchell, P.Eng.

CANEX AERIAL EXPLORATION LTD.

BETTY LOU GROUP:

BETTY LOU Nos. 1-14 M.C.
BETTY LOU Nos. 17 & 18 M.C.
BETTY LOU Nos. 1-4 Fracs.

LOU GROUP:

LOU Nos. 19-26 M.C.
BETTY LOU No. 5 Frac.

FIELD GEOLOGICAL MAPPING
SEPTEMBER 14 TO OCTOBER 21, 1959

Salary	C. W. Ball	Sept. 14 - Oct. 21	$ 845.00
"	S. G. Christie	Sept. 14 - Oct. 21	520.00
"	A. H. Caron - Surveying & Map preparation	Sept. 11 - Oct. 8	128.25
"	J. M. Anderson - Surveying	Sept. 30 - Oct. 15	100.00
"	G. W. Klein - Surveying	Sept. 30 - Oct. 15	88.00
Preparation of Report and study of air photos		Oct. 26 - Nov. 3	
	10 days @ $25.00 per day		250.00
Map preparation - 6 days @ $15.00 per day			90.00
Transportation Land Rover jeep - Merritt to Betty Lou and Lou M.C., 1,000 miles @ 15¢ per mile			150.00
Topographic mapping in preparing map on scale of 400 feet to 1 inch with 25 ft. contours as per account with Photographic Survey Corporation Ltd. (receipt enclosed)			745.40
		Total	$2,916.65

Clive W. Ball

3 November 1959

Clive W. Ball

INVOICE

THE PHOTOGRAPHIC SURVEY CORPORATION LIMITED

WEST COAST DIVISION

AIR SURVEY ENGINEERS

[illegible] West Pender Street • Vancouver [illegible] B.C.

Phone: MUtual 3-6501

DATE 30th September 1959

SOLD TO

Birkett Creek Mine Operators Ltd.,
700 Burrard Building,
1030 West Georgia Street,
Vancouver 5, B.C.

YOUR ORDER NO. B 1172

JOB NO. 59-90

TERMS: NET CASH INTEREST MAY BE CHARGED ON OVERDUE ACCOUNTS

SHIPPED VIA

TO:

Completion, Engineering Services:

(a) Topographic mapping, 400 ft/in 25 foot contours, pencil manuscript form:

2660 acres @ 23¢ per acre — $611.80
1670 acres previously mapped but 25 foot contours now added @ 8¢ per acre — 133.60

Bethlou Lou Groups $745.40

(b) Topographic mapping 400 ft/in 10 foot contours, and 25 foot contours in steeper areas, pencil manuscript only:

3948 acres @ 28¢ per acre — 1,105.44

$1,850.84

Federal Sales Tax 20.36
Provincial Sales Tax 3.91

Birkett Creek Mine Operators Ltd. (Diamond)

$1,875.11

Certified that the abovementioned works and services have been performed

N. E. McConnell, P.Eng.

E. & O. E.

No 2472

LEGEND

- 12 LIMESTONE
- 11 LIMEY TUFF
- 10 ARGILLITE & CHERTY ARGILLITE
- 9 GRAYWACKE & FELSPATHIC GRIT
- 9 QUARTZ-EYE TUFF
- 7 ANDESITE TUFF & ANDESITE AGGLOM.
- 6 ANDESITE
- Not on Map ? 5 QUARTZITE CONGLOMERATE?
- 4 RHYOLITE TUFF
- QUARTZ FELSPAR PORPHYRY
- 2 DIORITE
- DACITE
- STRIKE & DIP OF BEDDING
- STRIKE & DIP OF SHEARING & FOLIATION
- VERTICAL BEDDING & FOLIATION
- FAULT (Inferred from Air Photos)
- CREEK

BETTY LOU No. 18 M.C.
BETTY LOU No. 17 M.C.
BETTY LOU No. 8 M.C.
BETTY LOU No. 7 M.C.
BETTY LOU No. 2 Frac.
BETTY LOU No. 14 M.C.
BETTY LOU No. 12 M.C.
BETTY LOU No. 10 M.C.
BETTY LOU No. 9 M.C.
BETTY LOU No. 1 Frac.
BETTY LOU No. 13 M.C.
BETTY LOU No. 11 M.C.
BETTY LOU No. 3 Frac.
BETTY LOU No. 4 Frac.
BETTY LOU No. 6 M.C.
BETTY LOU No. 5 M.C.
BETTY LOU No. 4 M.C.
BETTY LOU No. 3 M.C.
BETTY LOU No. 2 M.C.
BETTY LOU No. 1 M.C.
LOU No. 26 M.C.
LOU No. 25 M.C.
LOU No. 24 M.C.
LOU No. 23 M.C.
LOU No. 22 M.C.
LOU No. 21 M.C.
LOU No. 20 M.C.
LOU No. 19 M.C.

SOIL

POSSIBLE SYNCLINAL AXIS

ROAD

RADAR STATION
SUMMIT PROMONTORY HILL
FORESTRY LOOKOUT

TRIANGULATION STATION

ROAD TO LOWER NICOLA

TRUE NORTH

FIG. 1

CANEX AERIAL EXPLORATION LTD.

GEOLOGICAL MAP

BETTY LOU No. 1—18, LOU No. 19—26 M.C. and BETTY LOU No. 1—5 Frac.

NICOLA MINING DIVISION

PROMONTORY HILL, MERRITT, B.C.
(50° N — 120° W)

SCALE: 1 in. = 400 Ft.

C.W. BALL C.W. Ball NOV. 3, 1959
B.M.D.

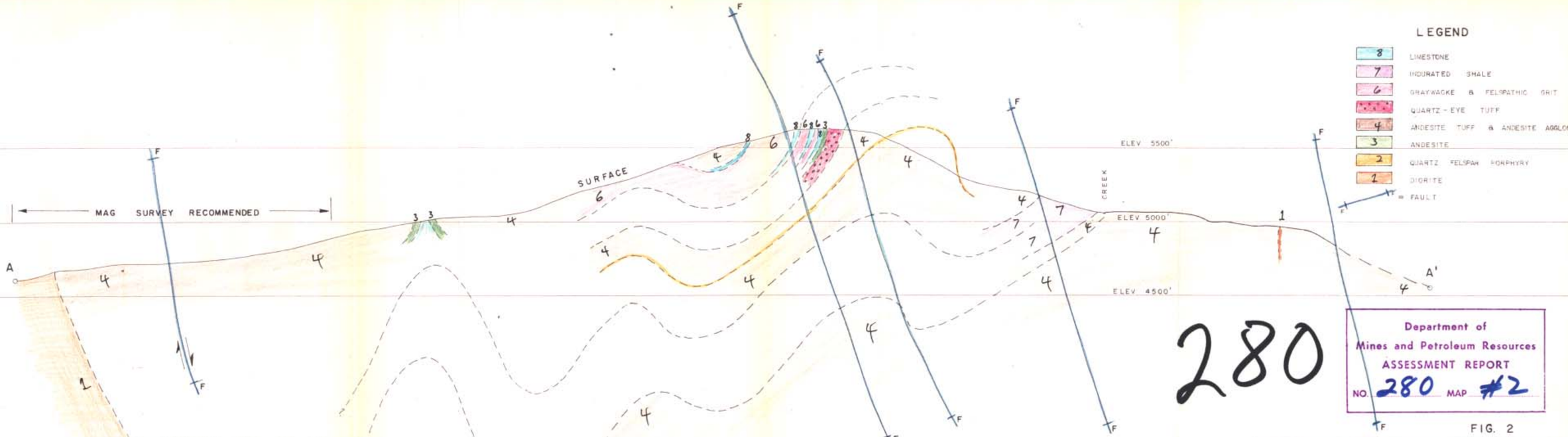

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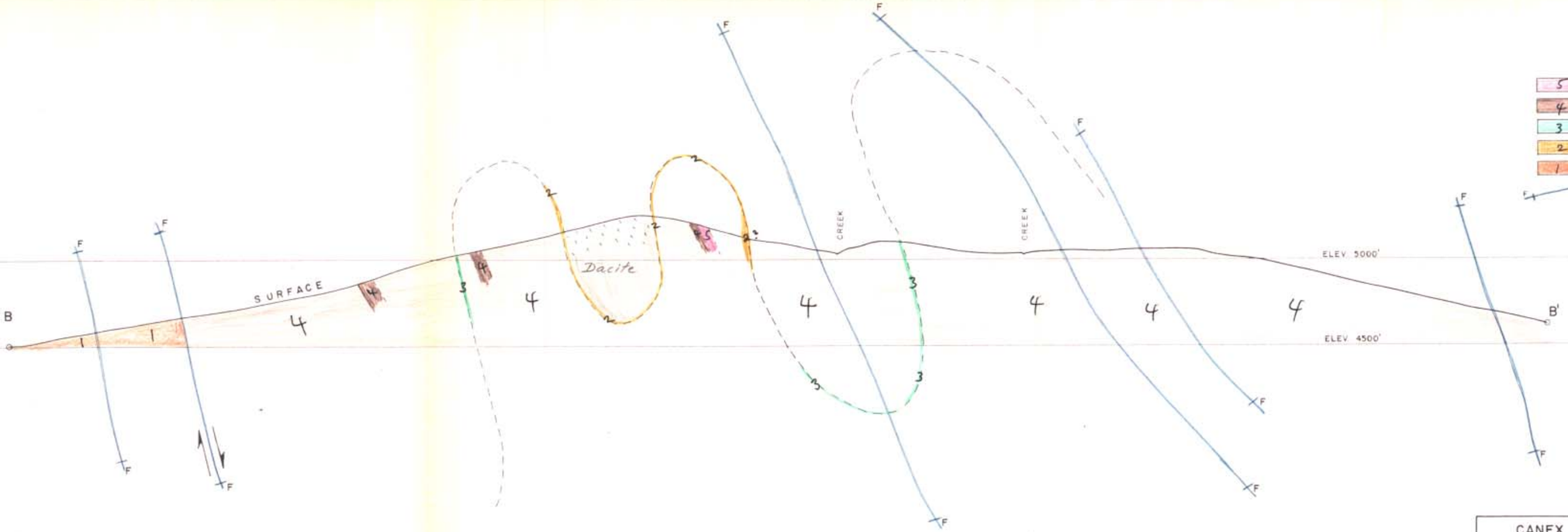
FIG. 2

CANEX AERIAL EXPLORATION LTD.

GEOLOGICAL CROSS-SECTION
(DIAGRAMMATIC)
ALONG LINE A-A'
BETTY LOU and LOU MINERAL CLAIMS
LOOKING NORTH - EASTERLY
NICOLA MINING DIVISION
SCALE: 1 in. = 400 Ft. (Natural)

C. W. BALL C.W. Ball NOV. 3, 1959
B.M.D.



LEGEND

- 5 GRAYWACKE and FELSPATHIC GRIT
- 4 ANDESITE TUFF & ANDESITE AGGLOMERATE
- 3 RHYOLITE TUFF
- 2 QUARTZ FELSPAR PORPHYRY
- 1 DIORITE
- F = FAULT

FIG. 3

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CANEX AERIAL EXPLORATION LTD.

GEOLOGICAL CROSS-SECTION
(DIAGRAMMATIC)

ALONG LINE B-B'

BETTY LOU MINERAL CLAIMS
LOOKING NORTH – EASTERLY

NICOLA MINING DIVISION

SCALE: 1 in. = 400 Ft. (Natural)

C. W. BALL C.W. Ball NOV. 3, 1959
B.M.D.