82K/16W

L50-116 NE.
Silver Giant Mines Ltd.(N.P.L)
Allen, Alfred R, Engineer.

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Alfred R. Allen

GEOLOGICAL ENGINEER

Silver Giant Mine,
Spillimachene B. C.,
June 4th 1947.

Mr. W. R. Wheeler, President,
Silver Giant Mines Ltd. (N.P.L.)
707 - 850 West Hastings St.,
Vancouver B. C.

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Dear Sir:

In accordance with your request of April 20 for a geological survey of the mineral claims Europa, Venus, Mars, Juno, Joe, I.O.Fraction, Silver Bell Fraction, Silver Bell No.1, Silver Bell, I left Vancouver, accompanied by Mr. T. Taylor, on April 27 and arrived at the property April 29.

Herewith is my report along with a geological map and two geological sections of the map-area.

No evidence of barite mineralization was discoveded on the nine mineral claims surveyed, and the geological information acquired indicates that no such mineralization is likely to be found west of the major northwest- southeast trending thrust fault. The survey has, however, brought into prominence several problems pertaining to the structure and genesis of the barite-sulphide deposit, and will be of considerable value in the future study of the property.

Yours very truly,

Alfred R. Allen

THE GEOLOGY OF THE MINERAL CLAIMS EUROPA VENUS MARS

JUNO JOE I.O. FRACTION SILVER BELL FRACTION

SILVER BELL No 1 & SILVER BELL

GOLDEN MINING DIVISION

BRITISH COLUMBIA

Report by
Alfred R. Allen
June 1947

THE GEOLOGY OF THE MINERAL CLAIMS EUROPA VENUS MARS JUNO JOE I. O. FRACTION SILVER BELL FRACTION------ SILVER BELL No1 and SILVER BELL------

A. INTRODUCTION

The purpose of the survey was first, to determine if geological conditions are favorable in the area surrounding the large barite-sulphide body on the Giant Crown grant mineral claim for the possible occurence of other valuable or similar mineral deposits, and second, to acquire and record as much geological infoemation as possible in order that it may be helpful in the future study of the barite-sulphide zone.

The survey was started April 29 and completed June 4, 1947.

The surveying was done by the writer and Mr. T. Taylor, prospector, of Vancouver B. C.

The topography and geology of the intervening and adjoining claims are necessarily included to give a complete picture of the area, but the surveying was largely confined to the nine mineral claims which form the subject of this report.

B. LOCATION

The 9 mineral claims are located in the Golden Mining Division, about 7 miles by road from Spillimachene B. C., adjacent to the Crown grant mineral claims Giant L 1109, Giant Fraction L6657, Dwarf L 6658, Midget L 6659. The Cranbrook to Golden highway, and the Kootenay Central Branch of the C.P.R. pass through Spillimachene.

C. CONCLUSIONS

Interbedded argillite, phyllite, and arkose conglomerate of the Horsethief Precambrian formation are thrust faulted against magnesian limestone and interbedded limestone, limestone conglomerate, and conglomerate of the Ottertail and Goodsir Lower Upper Cambrian formations. The Horsethief formation strikes 40 to 60 degrees west and is practically vertical. The Ottertail and Goodsir formations are folded into an A-symetrical syncline , the axis of which strikes north 70 degrees west. The southwest limb of the structure is vertical and overturned.

A major fault bisecting the map-area strikes north 45 to 60 degrees west and dips 45 to 60 degrees southwest.

There are no barite veins exposed on the 9 mineral claims, and the writer beleives that the barite-sulphide mineral zone or zones are confined to the Ottertail limestone on the west side of the major thrust fault.

C. GEOLOGY

1. Stratigraphy

Three geological formations occur within the area, namely, the Horsethief formation of Precambrian age, and the Ottertail and Goodsir formations of Lower Upper Cambrian age.

The Horsethief formation is composed of thick beds of light grey arkose conglomerate, argillite, and phyllite. The arkose conglomerate is composed of rounded and angular pebbles, chiefly of quartz and feldspar, in a matrix of light grey silicious material, or brown and purple limy argillaceous grit. The argillite is sheared, and is dark brown or green and black and in places grey, green, and cream banded. The phyllite is strongly sheared, dark grey, green, brown and black, and contains an abundance of very fine mica.

The Ottertail formation is composed of fine-grained dark grey to cream colored magnesian limestone which weathers buff to light grey. The weathered surface is uneven and rough. No bedding within the limestone, or interbeds of different rock composition, were observed within the map-area.

The Goodsir formation is composed of grey limestone and grey limestone conglomerate interbedded with about an equal amount of grey, green, and brown conglomerate made up of grey limestone pebbles and cobbles in a sheared argillaceous matrix. The limestone is dark grey, fine-grained, and weathers light grey. It occurs in beds a fraction of an inch to over 30 feet in thickness, and on the Juno and Joe mineral claims it grades into limestone conglomerate. The limestone conglomerate is made up of dark grey limestone pebbles to boulders , some banded, in a matrix of dark grey limestone. The limestone and limestone conglomerate are interbedded with a conglomerate of limestone pebbles and cobbles in a matrix of foliated argillaceous material. These limestone pebbles and cobbles have been elongated by orogenic forces into the shape of thin lenses. The argillac-

eous matrix contains mica oriented parallel to the surface of the elongated pebbles giving the appearance of flow structure.

2. Structure

The map-area is bisected by a major thrust fault which strikes 45 to 60 degrees west of north and dips 45 to 60 degrees southwest. The southwest segment has been thrust upward in relation to the northeast segment. The vertical displacement has been sufficient to bring the Horsethief formation into contact with the Ottertail and Goodsir formations. The Horsethief formation strikes north 40 to 60 degrees west and dips 80 degrees to vertical. The Ottertail and Goodsir formations are folded into an A-symetrical syncline, plunging at a low angle to the northwest. The west limb of the syncline is vertical to overturned and the east limb dips up to 50 degrees. The axis of the syncline strikes north 70 degrees west.

a. Faults.

A major thrust fault cuts diagonally across the central part of the map-area, and appears to truncate what is probably an older fault zone now occupied by a large barite-sulphide vein. The later structure, however, is off the area of the 9 claims under consideration, and will not be described in detail in this report.

The thrust fault was observed underground in tunnels 3,5, and 7, but not on the surface. The projected surface trace of the fault, within the map-area, is covered with talus and glacial drift, but short distances on both sides of this line Horsethief and Ottertail and Goodsir formations outcrop, thereby making possible an approximate location of the fault. Where intersected underground the fault zone is narrow and composed of a few inches of gouge, and the walls are of silicified limestone and contorted and sheared argillites and phyllites.

b. Fractures.

Throughout the Horsethief formation the beds of arkose conglomerate contain numerous short veins of vuggy quartz striking, in general, northeasterly across the bedding. Few such veins occur in the interbeds of argillite and phyllite. Similarly in the Goodsir formation numerous veins of calcite occur in the limestone beds but few in the interbeds of conglomerate which has the argillaceous matrix. Neither the quartz veins nor the calcite veins contain noticeable amounts of sulphides. The veins are probably fractures which formed during the period of thrust faulting and were later filled with quartz and calcite derived from ground waters which circulated through the siliceous Horsethief formation and limy Goodsir formation. No barite-filled fractures were found in either formation, and the quartz and calcite veins are, therefor, considered to be of a different age than the barite veins.

c. Shearing.

On the Mars mineral claim the Horsethief formation is strongly sheared along a strike of north 45 degrees west and a dip of 60 degrees southwest. The shearing was probably formed during the period of thrust faulting and is considered a reliable clue to the location and attitude of the fault.

Within the Goodsir formation the argillaceous matrix of the conglomerate is strongly sheared. The shearing has a uniform attitude of north 70 degrees west regardless of the attitude of the bedding. On the Silver Bell No 1 mineral claim, where the bedding is flat along the synclinal trough, the

strike of the shearing is north 70 degrees west and the dip 60 degrees southwest. The strike of this shearing is parallel to the axis of the fold, and not parallel to the major thrust fault. This indicates that the compressive forces causing the folding in the Goodsir formation were from a different direction and, therefor, likely of a different age than the period of major thrust faulting.

d. Folds.

The axis of the A-symetrical fold strikes north 70 degrees west across the Silver Bell and Silver Bell No.1 mineral claims and north of the peak of Jubilee mountain. The strata southwest of the axis are vertical to overturned and to the northeast they dip at 50 degrees and less. Along the trough of the syncline there are minor folds as shown on section A-B. The amplitude of the folding is less than that shown on the sections, since the sections are not perpendicular to the axis of the fold. Folding in the steeply tilted Horsethief formation is confined to minor undulations and small wrinkles near the thrust fault.

e. Theoretical Considerations Regarding The Geological History.

The barite mineralization occupies a zone, containing some brecciation, which has been traced for over a mile horizontally and 2500 feet vertically. This lies parallel to the shearing and fold axis in the Goodsir formation, and is quite probably a fault zone. There is no evidence of the continuance of this zone westerly across the thrust fault into the Mars mineral claim. The major fault, therefor, may be younger than the folding and probable faulting of the Ottertail and Goodsir formations. Similarly the barite mineralization appears to terminate at the major fault even though this zone

appears to be an excellent channel along which mineralizing solutions might flow, therefor, the fault is probably also younger than the period of barite and sulphide deposition.

From the above, a hypothetical history of the area is as follows:-

(1) Folding of the Ottertail and Goodsir formations along an axis striking north 70 degrees west, accompanied by intense shearing and probable faulting near the contact of the two formations.

(2) Deposition along the fault zone of barite from circulating solutions at moderate temperature, and contemporaneous or later deposition of sulphides within the barite, wall rocks, and inclusions of wall rock.

(3) Major faulting along a strike of north 45 to 60 degrees west. The barite-sulphide zone appears to have been cut by the fault and the westerly segment thrust 5000 (1) feet above the easterly segment. Minor fractures may have been formed, parellel to the thrust forces, through the Horsethief and Goodsir formations at this time, that is in a northeasterly direction..

(4) The minor fractures were filled by deposition of quartz and calcite from ground waters circulating throughout the siliceous Horsethief formation and limy Goodsir formation.

(5) Erosion to the present level has exposed the barite-sulphide zone easterly from the major thrust fault, and removed the upthrust segment southwest of the fault.

(1) Evans C.S., Brisco-Dogtooth Map-area, Geol., Surv., Canada, Sum.Rept. 1932 Part A 11 and sections 12 and 13, pp. 154-157.

E ECONOMIC POSSIBILITIES

On the 9 mineral claims surveyed there are no exposures of mineralization similar to the barite-sulphide body located on the Giant Crown grant mineral claim. Although a considerable part of the surface area is covered with talus and glacial drift, and it is concievable that barite-sulphide mineralization may occur thereunder, from the data acquired it is the opinion of the writer that there is small possibility of discovering such mineral concentrations on the surface of the claims surveyed.

The quartz veins in the Horsethief formation and the calcite veins in the Goodsir strata are short and narrow. No sulphide minerals were observed in the calcite, and although many of the quartz veins are iron-stained, and some iron sulphide has been observed in the quartz, it is quite unlikely that these veins will be found to contain valuable metallic minerals.

The major thrust fault appears to limit the westerly extension of the barite-sulphide mineralization, but, depending on the dips of each, this mineral concentration may extend underground to the southwest into the Europa and I. O. Fraction mineral claims.

ANN Nº7
ANN Nº6 Fr.
ANN Nº8 Fr.
ANN Nº5
ANN Nº4 Fr.
ANN Nº3
ANN Nº2 Fr.
ANN Nº1
BLUE BELL Nº8
SILVER BELL Nº4
SILVER BELL Nº6
BLUE BELL Nº6
BLUE BELL Nº7 Fr.
SILVER BELL Nº5 Fr.
SILVER BELL Nº7 Fr.
SILVER BELL Nº8 Fr.
ERIN Nº7 Fr.
ERIN Nº8 Fr.
BLUE BELL Nº4
BLUE BELL Nº5 Fr.
JUNO
JOE
BLUE BELL Nº3
SILVER BELL Nº1
SILVER BELL
ERIN Nº6 Fr.
ERIN Nº5 Fr.
MARS
MIDGET C. G.
BLUE BELL Nº2
BLUE BELL Nº1
DWARF C. G.
GIANT C. G.
GIANT Fr. C.G.
SILVER BELL Fr.
ERIN Nº1
Jubilee
ERIN Nº2
VENUS
Hidden TREASURE
EUROPA
ALPINE Nº1
ALPINE Nº2
ERIN Nº4
I. O. Fr.
ALPINE Nº4 Fr.
ALPINE Nº3
ERIN Nº3 Fr.
E. C. Nº1 Fr.
S-1
S-2
S-4 Fr.
S-3
S-6 Fr.
S-5 Fr.
S-8 Fr.
S-7
BARITE Nº3
BARITE Nº1 Fr.
BARITE Nº2
BARITE Nº5 Fr.
BARITE Nº4 Fr.
BARITE Nº7
BARITE Nº6
BILLIE Nº1 Fr.
BILLIE Nº2 Fr.
BILLIE Nº3 Fr.
BILLIE Nº4 Fr.
BILLIE Nº5 Fr.
G-1 Fr.
G-2
G-3
G-4
G-5
G-6
G-7
G-8
E. C. Nº8 Fr.
E. C. Nº7 Fr.
E. C. Nº5 Fr.
E. C. Nº6 Fr.
E. C. Nº3
E. C. Nº4
E. C. Nº2 Fr.
BILLIE Nº6 Fr.
BILLIE Nº7
BILLIE Nº8
SPILLIMACHEEN R.
Spillimacheen
N

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 9 MAP #1

REPORT #9
MAP #1

SILVER GIANT MINES
LTD. N.P.L.

CLAIMS MAP

Scale 1"= 1500'

June 1947

Alfred R. Allen

JUNO

JOE

MARS

VENUS

EUROPA

SILVER BELL Nº 1.

SILVER BELL

SILVER BELL FR

I. O. FR

Camp

Creek

Road

Symclinal Axis

A

B

C

D

— LEGEND —

Horsethief Formation	4
Ottertail Formation	3
Goodsir Formation	2
Barite – Sulphide	1

500 0 500 1000
Scale 1"=500'

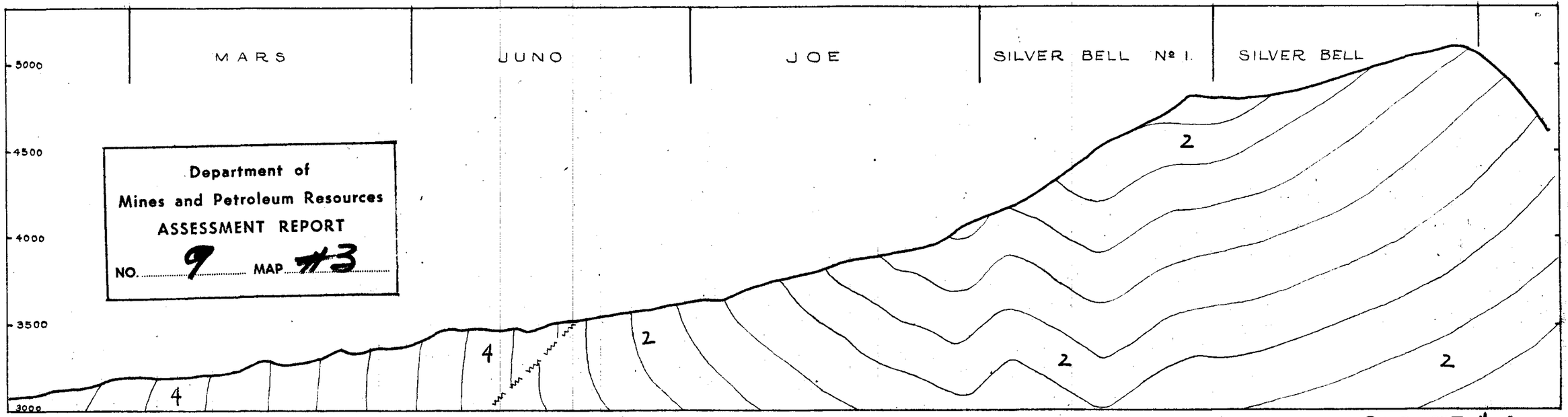
REPORT #9
MAP #2

GEOLOGY

SILVER BELL - SILVER BELL #1
SILVER BELL FR. - I. O. FR.
EUROPA - VENUS - MARS - JOE
AND JUNO MINERAL CLAIMS

GOLDEN MINING DIVN.

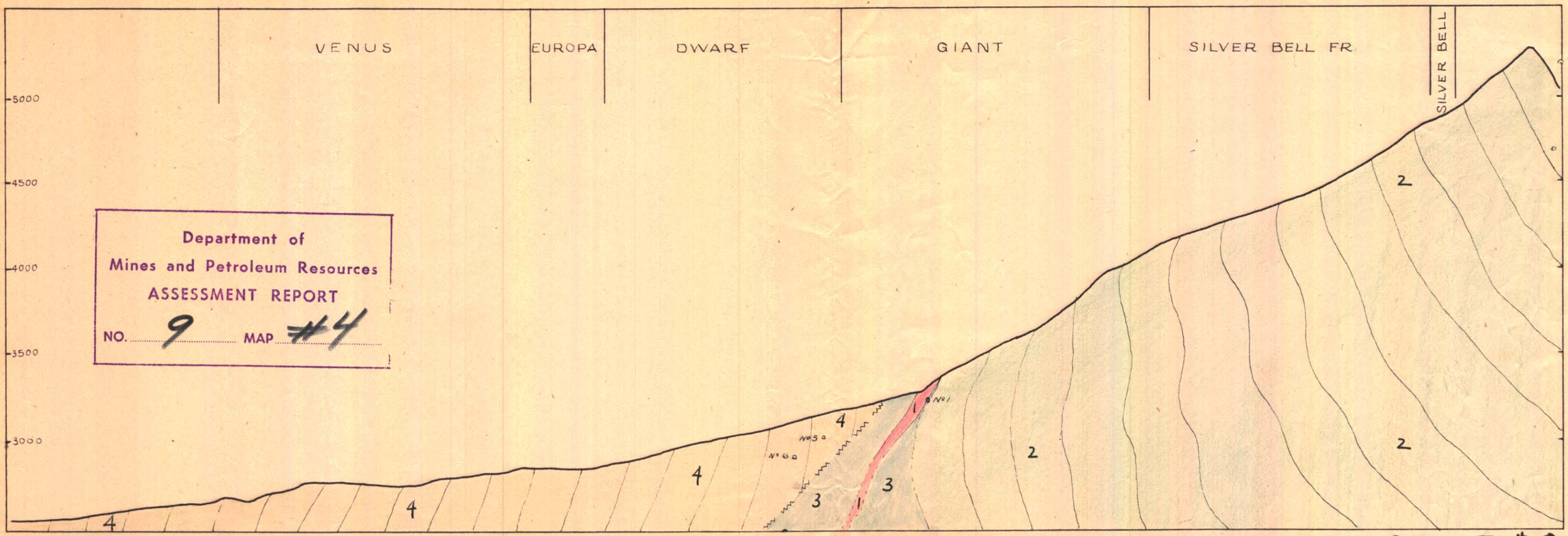
June 1947 Alfred R. Allen



SECTION A-B

REPORT # 9
MAP # 3

A.R. Allen June '47.
To Accompany Geological Map



SECTION C-D

REPORT #9
MAP #4

A.R. Allen June '47
To Accompany Geological Map