

EMPIRE DEVELOPMENT COMPANY LIMITED

1017 - 736 Granville Street
Vancouver 2, B. C.

143

January 17, 1966

Chief Gold Commissioner,
Department of Mines & Petroleum Resources,
Victoria, B. C.

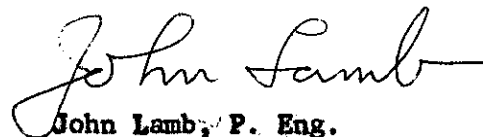
Dear Sir:

The field work carried out by John C. Lund and his crew on the Oktwanch claim group was under my direct supervision.

I visited the property personally, spending six days on field work and consulted with Mr. Lund frequently on the problems involved.

I am satisfied that the field work was performed as outlined and am in accord with conclusions contained in this Report.

Yours truly,


John Lamb, P. Eng.
Chief Geologist.

January 17, 1966

Chief Gold Commissioner,
Department of Mines and Petroleum Resources,
Victoria, B.C.

Dear Sir:

I hereby submit a statement of qualification as required under the "Mineral Act" Chapter 244 re application for acceptance of a geological survey as assessment work by a non-Professional Engineer.

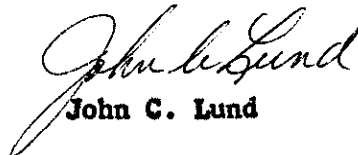
I received a B.Sc. degree from U.B.C. in 1962 (honors geology) and have at present completed first year on a Masters programme.

Record of employment and experience is as follows:

Field season of 1959 with B.C. Department of Mines working as a geological field assistant with Dr. J. M. Car; 1960 and 1961 with Dr. W. G. Jeffrey.

After graduating in 1962 I have been with Empire Development Company Limited working as both mine geologist and exploration geologist.

, Yours truly,


John C. Lund

GEOLOGICAL REPORT

OKTWAŃH GROUP

49° 54' 126° 16' S. E.

January 17, 1966

John C. Lund

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#1 FIG. 1 - GEOLOGICAL SECTIONS A-B, C-D

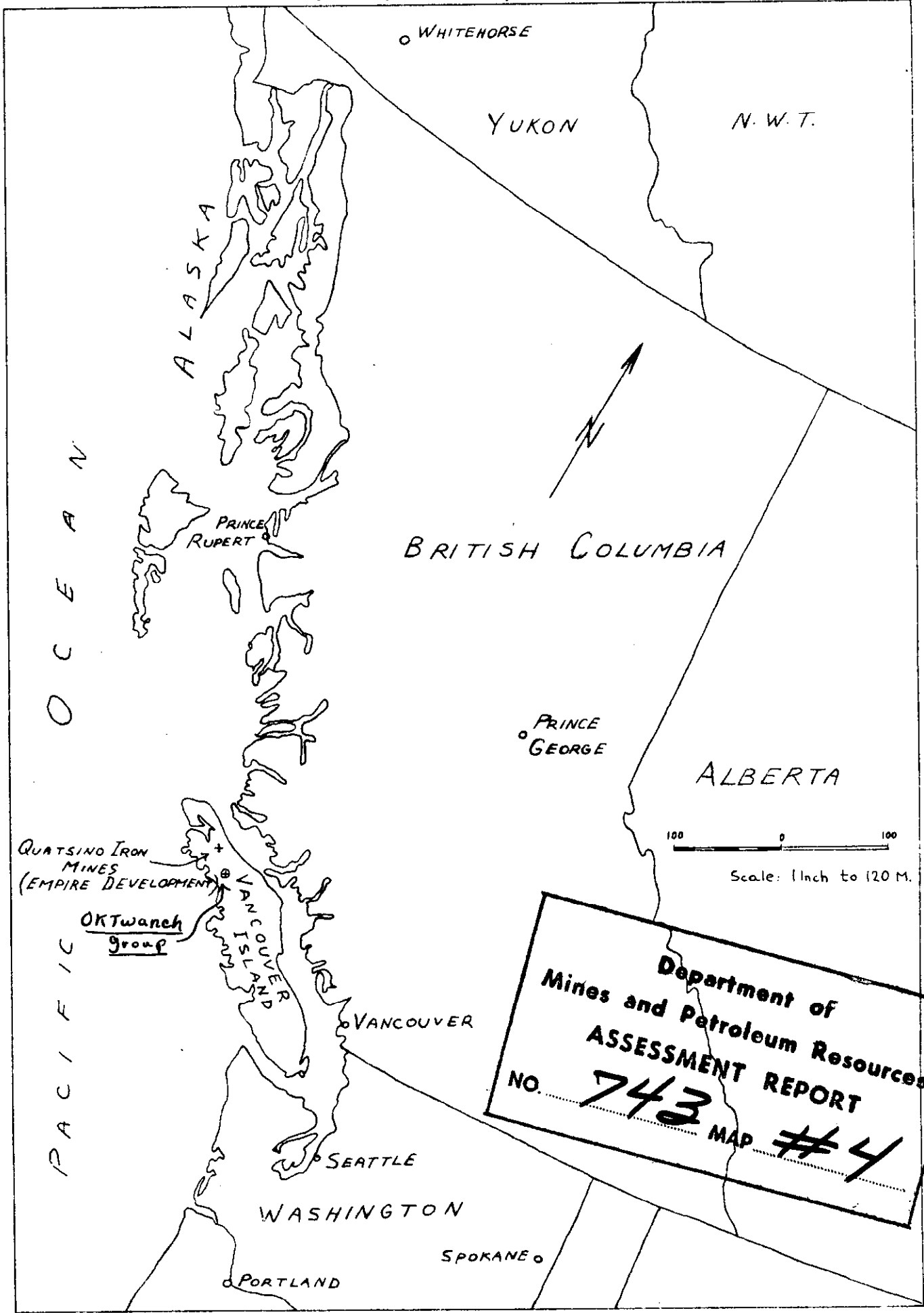
#2 FIG. 2 - GEOLOGICAL SECTION E-F

#3 GEOLOGICAL MAP

In Pocket

#4 Location map.

Location Map



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 743 MAP #4

REPORT ON THE OKTWANCH GROUP

SITUATED ON OKTWANCH RIVER (49°54' 126°16' S.E.)

UPPER NIMPKISH VALLEY, VANCOUVER ISLAND, B.C.

INTRODUCTION

The Oktwanch group consists of 18 claims located and held by Hans Knapp of Camp N, Beaver Cove, B.C. The group lies within the Alberni Mining Division. Claims names, recording numbers and dates recorded are as follows:

| <u>Name</u> | <u>Record No.</u> | <u>Date Recorded</u> |
|--------------|-------------------|----------------------|
| Oktwanch I | 9375 | July 14, 1964 |
| " II | 9376 | " " " |
| O. " III | 9377 | " " " |
| O. " IV | 9378 | " " " |
| O. " V | 9379 | " " " |
| O. " VI | 9380 | " " " |
| O. " XIII | 9381 | " " " |
| O. " XIV | 9382 | " " " |
| (M) O. " XV | 9383 | " " " |
| gkx O. " XVI | 9384 | " " " |
| O. " XVII | 9385 | " " " |
| O. " XVIII | 9386 | " " " |
| O. " XXV | 9387 | " " " |
| O. " XXVI | 9388 | " " " |
| O. " XXVII | 9389 | " " " |
| O. " XXVIII | 9390 | " " " |
| O. " XXIX | 9391 | " " " |
| O. " XXX | 9392 | " " " |

By virtue of an Option Agreement, exploration was carried out by Empire Development Company Limited of Vancouver, B. C.

LOCATION AND ACCESSIBILITY

The claims are situated immediately west of a northerly flowing tributary of the Oktwanch River about 7 miles south of Vernon Camp and 18 miles from the new townsite of Gold River ($49^{\circ}54'$ $126^{\circ}16'$ S.E.). Canadian Forest Products Ltd. logging road extends to within $3/4$ of a mile of the claims - their logging railroad within 5 miles. The railroad terminates at Beaver Cove, a logging community on the east coast of Vancouver Island.

TOPOGRAPHY

The topography is extremely rugged making traversing difficult. Streams have cut deeply into the rocks making canyons with walls that exceed 200 feet in height in places. Outcrop is abundant at higher elevations and deeply cut streams provide good exposures at lower elevations. The claims form a north-south trending block between elevations 1400 and 4500 feet, much of this area is covered by heavy growth of hemlock, balsam and cedar. Oktwanch River flows year round. Climate is moderate, rainfall may exceed 180 inches and snow can be expected.

GENERAL

Twenty-three days were spent, between July 14 and August 6, mapping geology on a scale of 1 inch = 500 feet. Dip needle readings were taken at intervals during traversing, and when readings greater than 10 deg. above background were obtained, these were checked out to determine cause and extent of anomaly. A Sharpes D 2 Dip Needle

was used. Limited traversing outside claim boundaries was made where such traverses were necessary to complete the geological picture.

Work was completed by the writer accompanied by a senior and two junior geological assistants. Accommodation was kindly made available by Canadian Forest Products Ltd. at Vernon Camp.

Topographic maps (National Topographic Series, 1:50,000 scale) were blown up to a scale of 1 inch = 500 feet approximately for use as a base map. Topographic map, air photos and altimeter were used as controls in positioning outcrops.

GEOLOGY

The claims lie in an area which has previously not been mapped geologically, but is believed to be underlain by Triassic rocks of the Karmutsen Group. These consist of andesitic and basaltic lavas with pophyritic members, rather poorly formed pillow lavas, and an interbedded sedimentary sequence consisting of tuffaceous argillites, tuffs, argillites, carbonaceous argillites and limestone. It is with this sedimentary formation that mineral occurrences are associated.

The above assemblage has been intruded by granitic rocks of probably granodiorite in composition, which underlies the easterly 1/3 of the claims. This intrusive is a relatively fresh, medium-grained granitic rock which forms part of a large mass of batholithic proportions extending at least from Muchalat Lake on the southwest to Woss Camp on the north (a distance of 38 miles). Contact between the Karmutsen rocks and intrusive is irregular and includes a zone in which there is a

gradation from predominantly volcanic rock veined by granodiorite to predominantly granodiorite with xenoliths of volcanic material. Small apophysis and dykes of granodiorite cut volcanic rocks.

Volcanic rocks are predominantly medium to coarse-grained aphanitic rocks of intermediate composition with lesser amount of basalts. These form massive flows - amygdaloidal textures typical of Karmutsen rocks elsewhere is noticeably absent as are pyroclastic. Andesites in places resemble a fine-grained diorite and were it not for the observed gradational relation from andesite to fine-grained "diorite" it would be difficult to distinguish the rock as part of the volcanic series. The massive character of the flows makes it difficult to obtain any general attitude to the beds but where possible bedding could be observed there is a general north-westerly dip.

Pillow lavas outcrop about 300 to 400 feet stratigraphically above the sedimentary horizon. These consist of irregular shaped and ill-defined pillows which appear to show a gradational effect from underlying massive flows. Pillows which tend to become more distinct upwards, can be recognized by the "rind" and interpillow spaces. Spaces are commonly filled with quartz and often contain small amounts of chalcopyrite and/or pyrite. Extent of pillows is not known as they extend beyond present mapped area.

Porphyritic rocks are not common, however, on occurrence of a feldspar porphyry outcrops at about elevation 2200 feet in Creek #6. The rock is a grey-green aphanitic rock with phenocrysts up to 3/4 inch long. Relation to other rocks is obscure.

Sedimentary rocks consist predominantly of grey to white crystalline limestone, possibly 150 feet in thickness, interbedded with the volcanic rocks. This unit forms the main sedimentary horizon and is overlain in most places by a thin bed of argillites and carbonaceous argillites. The argillaceous unit is not always present. An outcrop of tuffaceous argillite, found at the base of the limestone $1\frac{1}{2}$ miles to the north on Tolnai Creek, occurs on Creek #6 at about 2300 feet elevation. It contains poorly preserved fossils that have not as yet been identified. Thin discontinuous beds of argillaceous rocks occur above the limestone interbedded with volcanic rocks.

Near the intrusive contact, bedded sedimentary rocks stand near vertical or dip steeply to the east. Away from the contact beds dip at a moderate angle northwesterly conforming to the general northwesterly dip of volcanic rocks. Isolated blocks of argillites up to 30 feet by 100 feet occur in volcanic rocks, apparently disrupted from its original position by lava penetrating along bedding planes during volcanism, forcing these blocks into the present relative positions.

Apparently during a period of relative quiescence in volcanic activity limestones and argillites were deposited in local basins. Intermittent volcanism and sedimentary deposition of sediments produced thin interbedded lenses of argillites and carbonaceous argillites. This was followed by active volcanism which was responsible for thousands of feet of lavas which overly this thin sedimentary sequence.

Faulting is prevalent in steeply dipping east west and north-easterly sets. Displacement is small. Folding occurs on a small scale in sedimentary rocks near intrusive contact.

MINERALIZATION

Mineralization occurs generally at or near the intrusive contact, and consists of

- (a) Chalcopyrite, pyrite and in places pyrrhotite associated with garnet-epidote skarn, and
- (b) Magnetite.

Mineralization is always associated with the sedimentary rocks which serve as host.

Three occurrences of magnetite were located - largest of these was 3 feet wide by 90 feet long - each carried little if any associated copper mineralization. Traces of chalcopyrite were noted at several locations along the contact but only one was large enough to take a "second look" at. This latter showing called the "Falls Showing" occurs at elevation 2000 feet on a southwest tributary of No. 5 Creek associated with garnet-epidote skarn at the volcanic-limestone contact. The limestone band is possibly 10 feet thick. Mineralization consists of fairly massive chalcopyrite across a width of 10 to 14 inches exposed to a height of 12 feet. Surface trenching was done to better expose the mineral. The occurrence is on the nose of a ridge which is bounded to north and south-east by deeply cut creeks. There is no evidence of a continuation of mineralization in either creek. The skarn zone does, however, continue to the south, but appears barren. Greatest lateral extent that can be given the showing on the surface is probably 50 feet.

SUMMARY

Present mapping and exploration has outlined a sedimentary horizon within the Karmitsen volcanic rocks along which occurs three small lenses of magnetite and at least three occurrences of chalcopyrite. The largest of the copper showings occurs associated with garnet-epidote skarn along a volcanic-limestone contact. The limestone bed is possibly 10 feet thick at most, mineralized zone 10 to 14 inches. Limitations on size of mineralized zone seems to be set by the limited nature of limestone lense and extension of the copper zone could not be traced beyond a few feet.

January 17, 1966

John C. Lund
John C. Lund

STATEMENT OF COSTS

JULY 14 TO AUGUST 6, 1965

Wages:

| | | |
|------------|-------------------|---------------|
| Geologists | 27 days | \$ 870.00 |
| Assistants | 17 days @ \$16.00 | 272.00 |
| | 17 days @ \$14.00 | 238.00 |
| | 17 days @ \$12.00 | <u>204.00</u> |
| | | 1,584.00 |

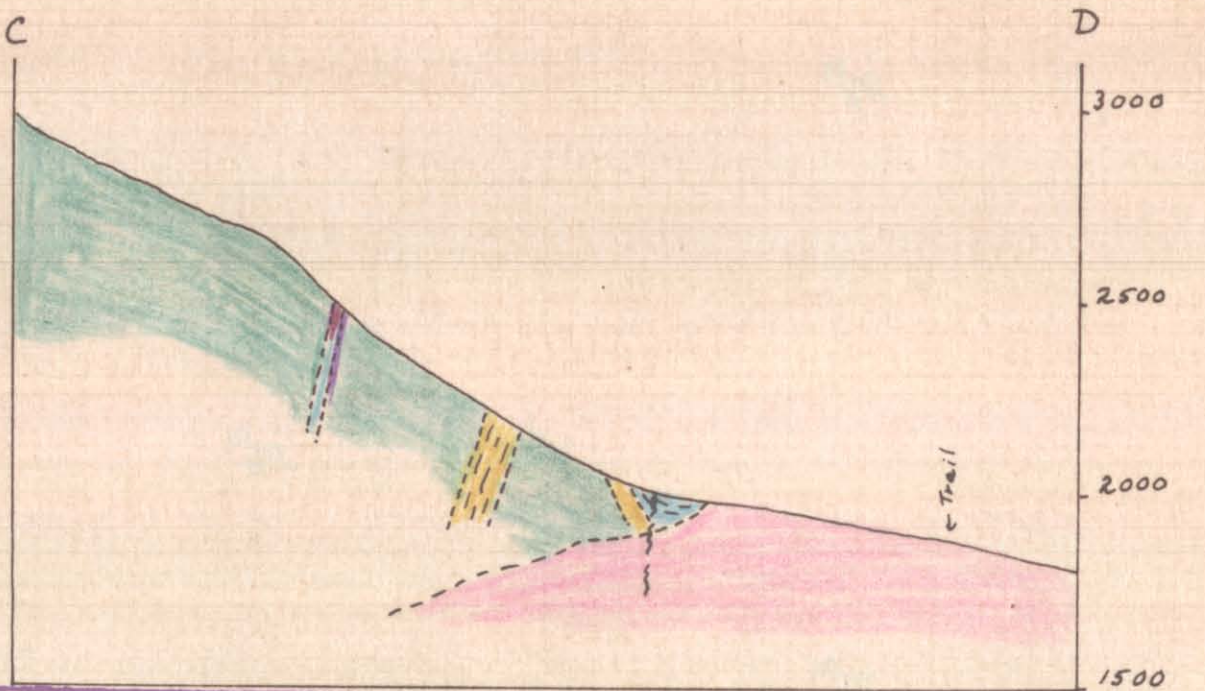
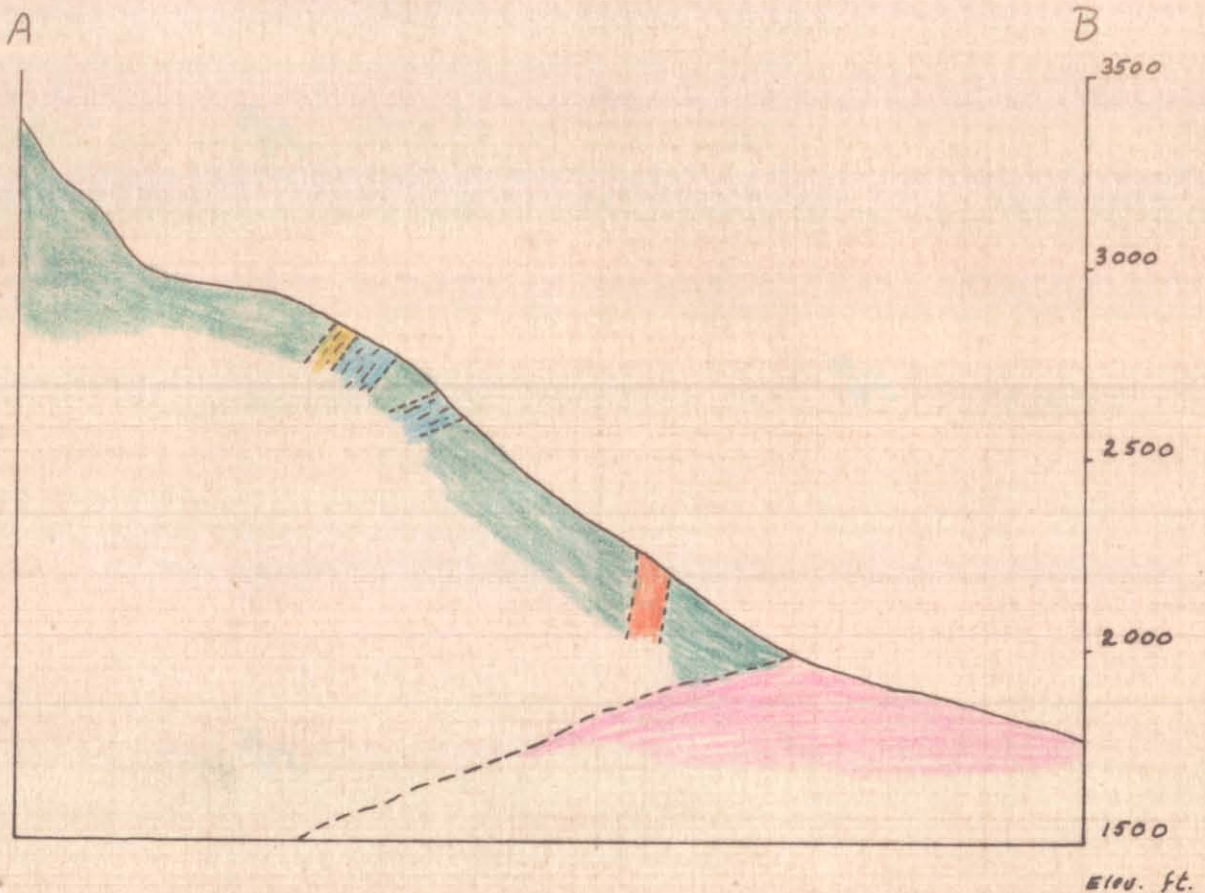
Room and Board:

| | |
|------------------------------|--------|
| 97 man days @ \$6.00 per day | 582.00 |
|------------------------------|--------|

Transportation:

| | |
|-------------------------------|---------------|
| (Rental, gas and maintenance) | <u>210.00</u> |
| | \$ 2,376.00 |

Geological Sections



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **743** MAP **#1**

Fig. 1

OKT WANCH GROUP
Sections A-B, C-D

scale 1" = 500'

Sept. 1965

John LeGrand
John LeGrand

Geological Section

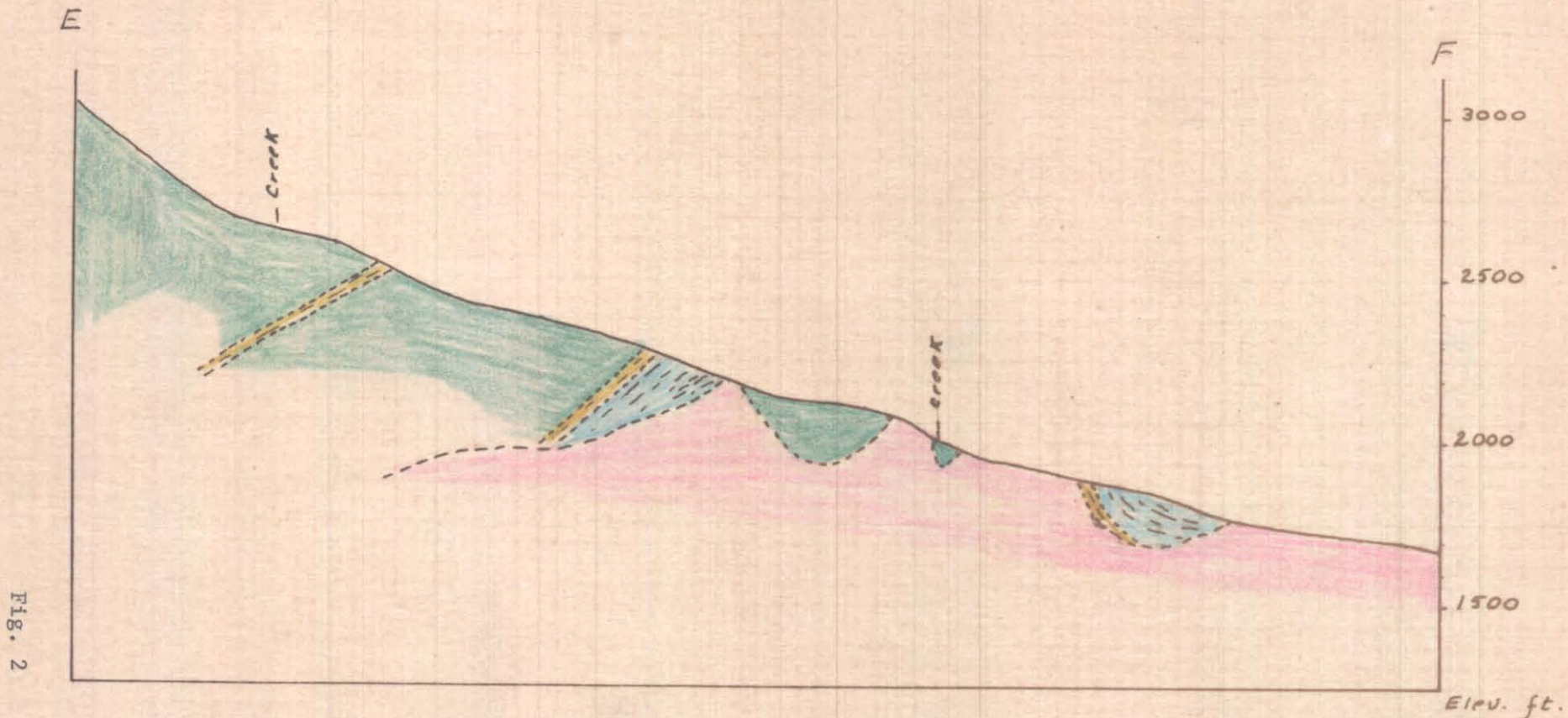


FIG. 2

Department of
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ASSESSMENT REPORT
NO. 750 MAP 27

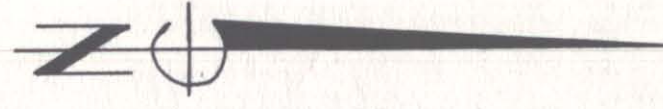
OKTWANCH GROUP
Section E-F

Scale 1" = 500'
Sept 1965

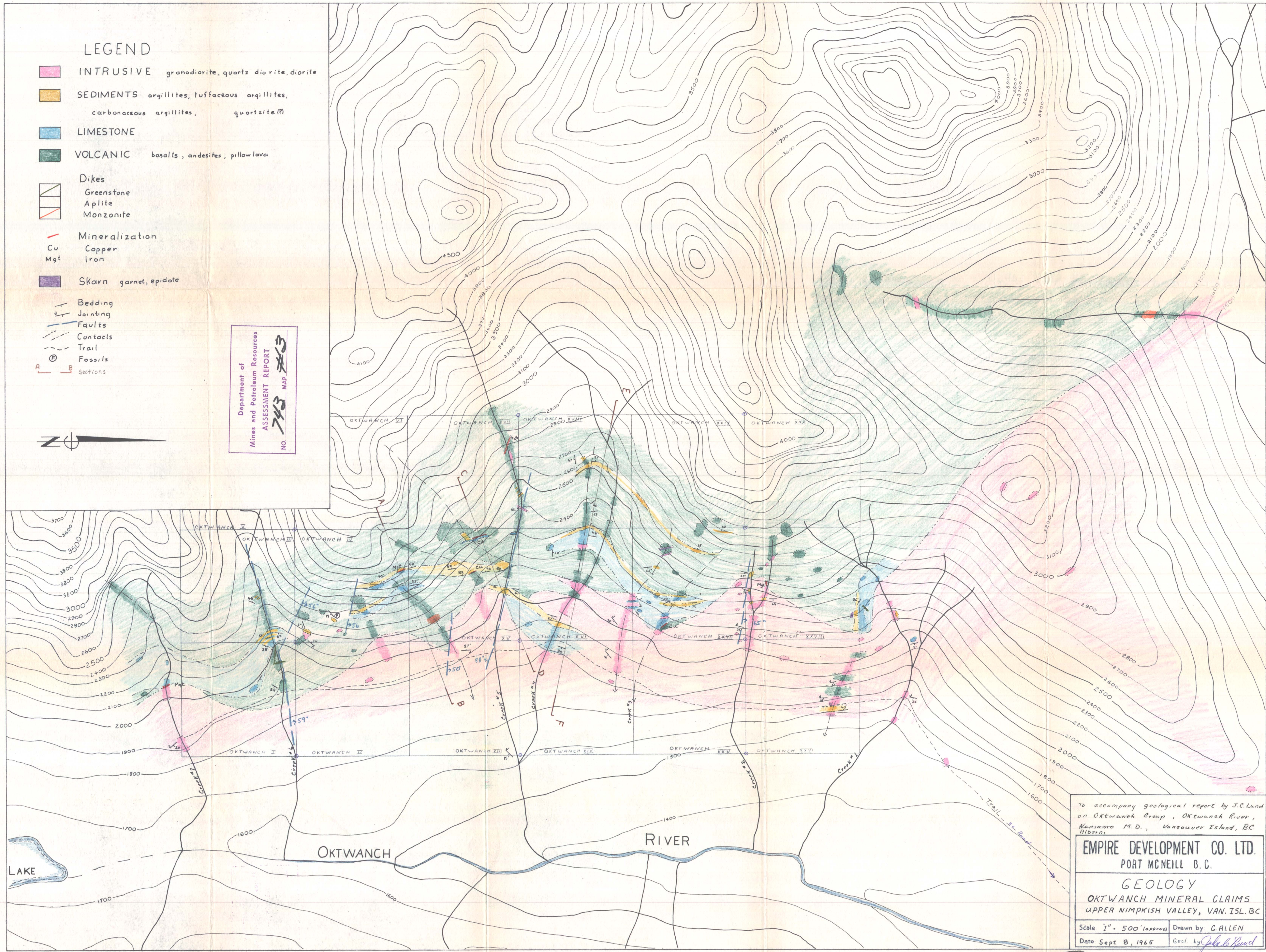
John L. Lund.
John L. Lund.

LEGEND

- INTRUSIVE granodiorite, quartz diorite, diorite
- SEDIMENTS argillites, tuffaceous argillites,
carbonaceous argillites, quartzite(?)
- LIMESTONE
- VOLCANIC basalts, andesites, pillow lava
- Dikes
 - Greenstone
 - Aplite
 - Monzonite
- Mineralization
 - Copper
 - Iron
- Skarn garnet, epidote
- Bedding
- Jointing
- Faults
- Contacts
- Trail
- Fossils
- Sections



Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 743 MAP



To accompany geological report by J.C. Lund
 on OKTWANCH Group, Oktwanch River,
 Nanaimo M.D., Vancouver Island, BC

EMPIRE DEVELOPMENT CO. LTD.
 PORT McNEILL B.C.

GEOLOGY
 OKTWANCH MINERAL CLAIMS
 UPPER NIMPKISH VALLEY, VAN. ISL. BC

Scale 1" = 500' (approx) Drawn by G. ALLEN
 Date Sept. 8, 1965 Geol. by *J. C. Lund*

MI 743