

825483

Kobau Gp

- pre-Middle Mesozoic metamorphic rocks bounded mainly by Okanagan Batholith, and in fault contact with Triassic volcanic rxs and sediments.
- predominant rx type is gtzte but schistose and massive greenstone and pelitic units including micaceous and amphibolitic schist and phyllite are also present.
- marble as lenticular bodies
- three phases of Folding
 - 1st: - large recumbent, tightly compressed nappes
 - greenschist facies
 - 2nd: - deformed 1st phase structures and produced overturned and normal folds.
 - small granitic + dioritic intrusions cut and deform earlier structures (in Mesozoic) + thermally metamorphosed country rxs to hblt - hornfels facies within contact aureoles.
 - 3rd: - gentle folds (may be related to the episode of intrusion)
 - Faulting in Tertiary

Massive Qtzite
Foliated Phyllitic Qtzite
Phyllite and Schist
Greenstone
Marble and Calcareous Phyllite

foliation // compositional layering
(developed during 1st phase of folding).

Pelitic Seds $\xrightarrow[\text{(from metamorphism)}]{\text{altered to}}$ Phyllite
Basic RXS \longrightarrow Chlorite Schist
Argillaceous Qz Snds \longrightarrow Micaceous Qtzite

Unit 1

interfoliated qtzite and phyllite with minor amt of greenstone and schist

Qtzite foliated with biotite, chlorite, tremolite and white mica in fine layers between siliceous bands.

Phyllite - fine grained, foliated, composed of biotite, white mica, quartz + sericite. (sphene, plag + chlorite in minor amts)

Greenstone - massive, sometimes schistose, composed of actinolite, opaque ferruginous minerals, plag, biot, minor qz.

Thickness $\sim 1000'$

Unit 2

light green chloritic phyllite and schist, phyllite with small lenses of dark green amphibolite and chloritic greenstone containing sheared lens-shaped bodies of possible pyroclastic origins

Common - chlorite, tremolite, biot, plag; less common - qz, sphene, epidote.

Calcite (thin stringers) within chloritic phyllite

Foliation assoc. with early folding is well developed \rightarrow closely spaced phyllitic cleavage, fine chloritic and micaceous schistosity.

Thickness $\sim 400'$

Unit 3

Fine to coarse grained massive and indistinctly foliated quartzite + massive, extremely fine grained, pure siliceous rx (meta. chert or microcrystalline quartzite?)

Colours - white to grey to dark blue

Occasionally - compositional layering and coplanar foliation are outlined by biotite and rarely chlorite.

Subunit - chloritic phyllite; found within unit 3.

Thickness ?

Unit 4

foliated phyllitic quartzite and siliceous phyllite

Colour: grey, white and blue, minor yellow and reddish brown

Qz - fine to med. grained, highly recrystallized

Fine phyllitic foliation of biotite, chlorite, tremolite + ferruginous minerals outline lenticular siliceous layers.

Where \rightarrow 25% Phyllite, often contains 20 to 30% Pyrite, graphite + other opaque minerals and chlorite, sericitized plag.

Thickness \sim 700'

Unit 5

Massive and irregularly foliated quartzite
Qz - white + light grey, med. to fine grained
Biot. Flakes up to 0.04" in foliations
near intrusive.

Thickness ~ 600'

Unit 6

Light to dark green amphibolitic and
chloritic phyllite and schist and some
green meta. basic ig. rxs.

Subunit of Marble

Minerals: Chlorite, tremolite/actinolite,
white mica, plag., biot.

Marble: white, light grey to blue,
found in two bands of sheared lenses,
10' to 30' thick, < 100' length (within 50'
of one another); predominantly calcite,
minor dolomite, tremolite, + graphite

Thickness ~ 350'

Unit 7

two types of foliated quartzite: 1) light grey,
relatively pure, thin foliae containing white
mica, biotite, rarely chlorite, 2) highly
phyllitic (up to 50%), thin bands of chlorite,
tremolite/actinolite, biot.

Thickness ~ 250'

Unit 8

Phyllite + massive qzite; light grey-green to dark green phyllite + schist; tremolite/actinolite, chlorite, minor biot, qz, sphene, calcite, Fe-minerals

Thickness ~800'

Unit 9

Grey + white foliated micaceous and phyllitic qzite

Thickness ~200'

Assumption - no major facies changes and/or unconformities are present.

Second Type of Deformation: kink bands, chevron folds, asymmetric similar folds, overturned + normal flexural slip folds

Major Structure - double plunging antiform

Faulting.

two well developed sets: 1) 150° - 170°
2) 120° - 130°

Joints

two sets: 1) striking northerly, dipping steeply to east and west
2) near vertical, striking west to north-west.

Regional Metamorphism

did not exceed greenschist facies grade

Grade: lower Barrovian sub-facies

$T_{meta} < 450^{\circ}\text{C}$ (due to lack of Andalusite or Kyanite + Mg/Ca ratios in calcite marble)

Contact meta of hornblende-hornfels facies T 580°C to 690°C

KOBALU GROUP.

OKULITCH 69.

AGE: PRE-CRETACEOUS - POST-DEVONIAN.

LITHOLOGY: QUARTZITE, PHYLLITE, GREENSTONE MINOR LST.
EUGED SYNCLINAL

METAMORPHIC GRADE: MID GREENSCHIST.

DEFORMATION: PHASE 1) TIGHT RECOMBENT FOLDS
EAST TREND F. AXIS. - SYN-METAMORPHIC

PHASE 2) OVERTURNED AND NORMAL FOLDS
↳ STEEP AXIAL PLANES AN S.E.
TRENDING F. AXIS.

- FOLLOWED BY INTRUSION OF GRANITIC AND DIORITIC STOCKS. . 144×10^6 YRS.
- CONTACT METAMORPHISM - HBL \rightarrow HORNFELS GRADE

PHASE 3) POSSIBLY RELATED INTRUSIVE EPISODE.
NORTHERLY TRENDING. AXIS.

- FRACTURING IN TERTIARY (EXTENSIONAL) BROKE EXISTING STRUCTURES INTO WEDGES AND BLOCKS.
- FRACTURES // AXIAL PLANES OF EARLY AND LATE FOLDS.

CORRELATIONS: - LITHO/STRUCTURAL SIMILARITIES TO SHUSWAP COMPLEX.

- POSSIBLY CORRELATIVE WITH SOUTHERLY ANARCHIST.

LITHOLOGY (CONT)

- DOMINANT QUARTZITE, ALSO GREENSTONE, PELITES AND MARBLE, - AMPHIBOLITE SCHISTS OCCUR.

IGNEOUS INTRUSIONS - FOUR PHASES ? !!

- FAIRVIEW AND OLIVER GRANODIORITES CONSIDERED OLDEST BECAUSE MORE SHEARED AND ALTERED THAN TESTALINDEN OR SIMILKAMEN.

FAIRVIEW - 110 ± 5 MYA

OLIVER. $136-144 \pm 6$ MYA.

- NUMEROUS SMALL DIORITIC STOCKS IN WESTERN AREA MAY BE CORREL WITH FAIRVIEW, OLIVER.
- ALL ACIDIC INTRUSIONS RELATED TO TRIASSIC JURASSIC NELSON INTRUSIONS.

COMPOSITION - OSOYOOS SATELLITE PLUTONS.

QTZ DIORITE - GRANODIORITE.

ALTERATIONS - CHLORITE, EPIDOTE.

ALBITE, SERICITE, CALCITE, EPIDOTE.

FAIRVIEW - GRANODIORITE, SIMILAR TO OSOYOOS STOCKS BUT LESS ALTERED AND FOLIATED.

TESTALINDEN - GRANODIORITE, NOTE HORFELSING.

PLAGIOCLASE, MICROCLINE, QTZ

BIOTITE AND HBLP.

- SIMILAR TO SIMILKAMEN GRANO DIORITE

OLIVER - GRANITE.

- THREE PHASES - GRANITE, QZ
MONZONITE AND ASSOC. DYKES.