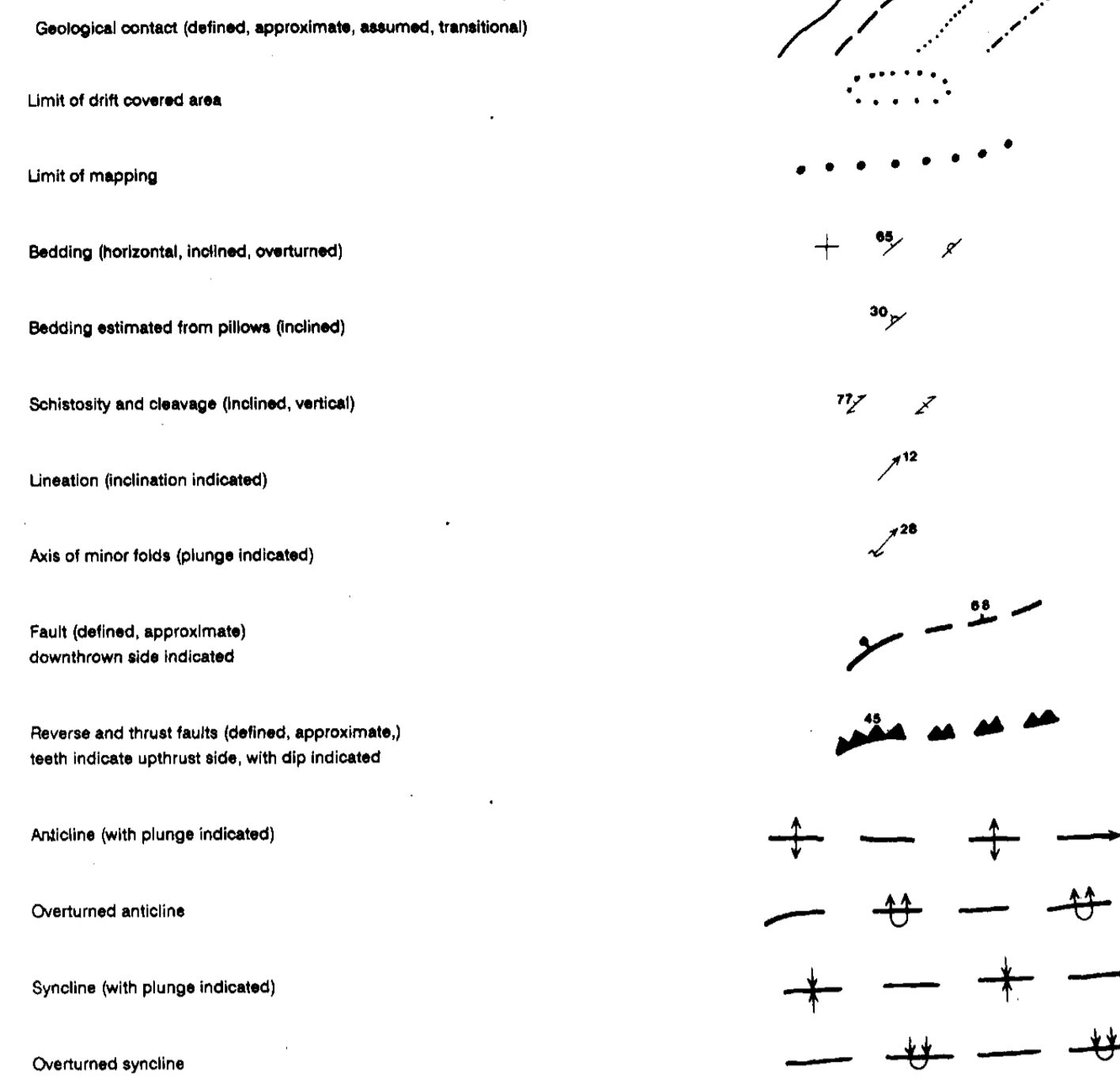


SYMBOLS

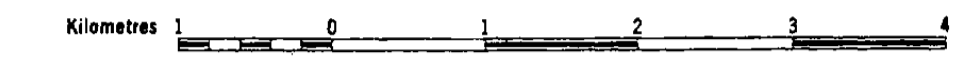


This map includes data compiled from maps and reports from the following sources:

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Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources
GEOLOGICAL SURVEY BRANCH
OPEN FILE MAP 1989-6 (SHEET 1 OF 9)
**GEOLOGY OF THE
PORT ALBERNI - NANAIMO LAKES
AREA**
NTS 92F/1W, 92F/2E AND PART OF 92F/7E
GEOLOGY BY N.W.D. MASSEY, S.J. FRIDAY,
J.M. RIDDELL AND S.E. DUMAIS, 1988
COMPILATION BY N.W.D. MASSEY

SCALE 1:50 000



LEGEND

INTRUSIVE ROCKS

- LATE EOCENE**
- CATFACE INTRUSIONS
- Tc HORNBLENDE-FELDSPAR DACITE PORPHYRIES
- ?JURASSIC**
- MINOR INTRUSIONS
- Pt PYROXENE-FELDSPAR DIABASE (A), FELDSPAR, QUARTZ-FELDSPAR PORPHYRY (F), HORNBLENDE-FELDSPAR PORPHYRY (H)
- EARLY TO MIDDLE JURASSIC**
- ISLAND INTRUSIONS
- Ji DIORITE, GRANODIORITE, QUARTZ DIORITE OFTEN WITH ABUNDANT KENNELS, APLITE
- LATE TRIASSIC**
- Ti SILLS AND DYKES: DIABASE AND GABBRO (COEVAL WITH KARLUTSEN FORMATION)
- VOLCANIC AND SEDIMENTARY ROCKS**
- QUATERNARY**
- Q UNCONSOLIDATED GLACIAL TILL AND POORLY SORTED ALLUVIUM
- UPPER CRETACEOUS**
- NANAIMO GROUP
- Knh HASLAM FORMATION: ARGILLITE, SCLEROTINE, SHALE AND MINOR SANDSTONE
- Knc COMOX FORMATION: BULLOCK AND PERPLE CONGLOMERATE, SANDSTONE AND MINOR SCLEROTINE
- LOWER JURASSIC**
- BONANZA GROUP
- Jb CESSIPON GRANITE, ANDESITE, DACITE, TUFF, SANDY TUFF, SANDY ANDESITE, SANDY ANDESITE AND BRECCIA, WITH MINOR ARGILLITE AND SANDSTONE
- UPPER TRIASSIC**
- VANCOUVER GROUP
- Tqp QUATSINO AND PARSON BAY FORMATIONS (UNDIFFERENTIATED): SLISTONE
- Tk KARLUTSEN FORMATION: FLOWED AND MASSIVE BASALTIC FLOWS, HYALOCLASTIC AND HYALOCLASTIC BRECCIA
- ?MIDDLE DEVONIAN TO LOWER PERMIAN**
- SICKER GROUP
- Ps St. Mary's Lake Formation: SCLEROTINE, ARGILLITE, CONGLOMERATE, SANDY SANDSTONE AND ARGILLITE, CHERTY ARGILLITE, CHERT AND MINOR JASPER
- Psm Mount Mark Formation: MASSIVE, CHERTY ARGILLITE, BEDDED Limestone, MARBLE, CHERT, CHERTY ARGILLITE AND SLISTONE
- Psc Cameron River Formation: BEDDED Limestone, ARGILLITE, SANDSTONE, CONGLOMERATE, SANDY SANDSTONE, SANDSTONE, SANDSTONE, ARGILLITE, EPICLASTIC SANDSTONE, CONGLOMERATE
- Psmr McLaughlin Ridge Formation: BEDDED Limestone, ARGILLITE, SANDSTONE, SANDSTONE, ARGILLITE, EPICLASTIC SANDSTONE, CONGLOMERATE, SANDY SANDSTONE, SANDSTONE, SANDSTONE, ARGILLITE, EPICLASTIC SANDSTONE, CONGLOMERATE
- Psn Nitinat Formation: PROXIMATE FELDSPARIC AGGLOMERATE, BRECCIA AND LAPILLI TUFF, MASSIVE AND FLOWED FLOWS, MASSIVE TUFFS AND LAPILLI TUFF, LAMINATED TUFF, AND CHERT
- Psd Duck Lake Formation: FLOWED AND MASSIVE BASALTIC FLOWS, MONOCLINIC BASALT, BRECCIAS AND FLOW BRECCIAS, CHERT, JASPER AND SANDSTONE, FELDSPARIC TUFF AND LAPILLI TUFF, MASSIVE DACITE AND RHYOLITE



GEOLOGY OF THE PORT ALBERNI-NANAIMO LAKES AREA

NTS 92F/1W, 92F/2E AND PART OF 92F/7E

GEOLOGY BY
N. W. D. MASSEY, S. J. FRIDAY, J.M. RIDDELL
AND S.E. DUMAIS. 1988.

COMPILATION BY N. W. D. MASSEY

LEGEND FOR SHEETS 4 - 9

INTRUSIVE ROCKS

LATE EOCENE

CATFACE INTRUSIONS

Tc
d DACITE
f FELDSPAR > HORNBLENDE
h HORNBLENDE > FELDSPAR
i RHYOLITE

?JURASSIC

MINOR INTRUSIONS

A PYROXENE-FELDSPAR DIABASE
F FELDSPAR, QUARTZ-FELDSPAR PORPHYRY
H HORNBLENDE-FELDSPAR PORPHYRY

EARLY TO MIDDLE JURASSIC

ISLAND INTRUSIONS

Ji
a APLITE
b MAFIC DYKES
c MONZONITE
d DIORITE, GABBRO
f FELDSPAR PORPHYRY
g GRANODIORITE
m DIORITE WITH ABUNDANT MAFIC XENOLITHS
n GRANODIORITE WITH ABUNDANT MAFIC XENOLITHS
p GRANITE
q QUARTZ DIORITE
z QUARTZ MONZONITE

LATE TRIASSIC

SILLS AND DYKES (COEVAL WITH KARLUTSEN FORMATION)

Rki
i DIABASE, GABBRO AND FLOWER GABBRO

VOLCANIC AND SEDIMENTARY ROCKS

UPPER CRETACEOUS

NANAIMO GROUP

HASLAM FORMATION

Knh
a ARGILLITE SHALE
f SILTSTONE
s SANDSTONE

COMOX FORMATION

Knc
b BOULDER CONGLOMERATE
c COBBLE CONGLOMERATE
g GRANULE CONGLOMERATE
p PEBBLE CONGLOMERATE
s SANDSTONE, PEBBLY SANDSTONE
t SILTSTONE

LOWER JURASSIC

BONANZA GROUP

JB
b HETEROLITHIC BRECCIA
k PYROXENE-FELDSPAR CRYSTAL LAPILLI TUFF, BRECCIA
n MAFIC TUFF, LAPILLI TUFF

UPPER TRIASSIC

VANCOUVER GROUP

PARSON BAY FORMATION

Rp
s FLAGGY LIMESTONE, BIOHERMAL LIMESTONE
t LAMINATED TUFF, TUFFACEOUS ARGILLITE, ARGILLITE

QUATSINO FORMATION

Rq
i LAMINATED SILTSTONE, ARGILLITE
q MASSIVE MICRITE

KARLUTSEN FORMATION

Rk
b PILLOW BRECCIA
f FELDSPAR CRYSTAL TUFF, LAMINATED TUFF +/- BRECCIA
h HYALOCLASTITE, HYALOCLASTITE BRECCIA
i DIABASE, GABBRO DYKES AND SILLS
m MASSIVE FLOWS
p PILLOWED FLOWS
s VOLCANIC SANDSTONE
t LAMINATED TUFF, TUFFACEOUS ARGILLITE, ARGILLITE
v VOLCANIC CONGLOMERATE
y CHLORITE SCHIST



?MIDDLE DEVONIAN TO LOWER PERMIAN

SICKER GROUP

ST MARY'S LAKE FORMATION

PsS
c CHERT, CHERTY TUFFS, CHERTY SEDIMENTARY ROCKS
h POLYMYCTIC CONGLOMERATE, BRECCIA
i LIMESTONE, CRINOIDAL LIMESTONE, BEDDED LIMESTONE
o JASPER, HEMATITE, MAGNETITE-CHERT IRON FORMATION
s VOLCANIC SANDSTONE AND PEBBLE CONGLOMERATE
t INTERBEDDED SILTSTONE, ARGILLITE, AND THINLY BEDDED SANDSTONE
w HORNFELSED SEDIMENTS

MOUNT MARK FORMATION

Psmm
a ARGILLITE, CHERTY ARGILLITE
c CHERT
f LIMESTONE, CRINOIDAL LIMESTONE, BEDDED LIMESTONE, MARBLE
m MARCON CALCAREOUS TUFF, BRECCIA
t INTERCALATED THINLY BEDDED SANDSTONE, SILTSTONE, ARGILLITE
v SILTSTONE, CHERTY SILTSTONE

CAMERON RIVER FORMATION

PsC
a ARGILLITE, CHERTY ARGILLITE
c CHERT, CHERTY TUFF
f FELSIC TUFF, CRYSTAL TUFF
g ARGILLITE +/- SULPHIDES
h HETEROLITHIC CONGLOMERATE, BRECCIA
i LIMESTONE, CRINOIDAL LIMESTONE, BEDDED LIMESTONE, MARBLE
k LITHIC TUFF, LITHIC TUFFACEOUS SANDSTONE
l LAMINATED TUFF, CHERTY TUFF
o MASSIVE APHYRIC MAFIC FLOWS OR SILLS
p JASPER, HEMATITE, MAGNETITE CHERT IRON FORMATION
r RHYOLITE, DACITE SILLS
s MASSIVE TUFFACEOUS SANDSTONE
t INTERCALATED THINLY BEDDED SANDSTONE, SILTSTONE AND ARGILLITE
u EPICLASTIC SANDSTONE, GRANULE AND PEBBLE CONGLOMERATE
v SILTSTONE, CHERTY SILTSTONE
w HORNFELSED SEDIMENTS
y CHLORITE SCHIST, TALC-CHLORITE SCHIST

MCLAUGHLIN RIDGE FORMATION

PsMr
a PYROXENE CRYSTAL TUFF, LAPILLI TUFF
b PYROXENE RICH VOLCANIC BRECCIA, AGGLOMERATE
c CHERT, CHERTY TUFF
d FELSIC LAPILLI TUFF, FELDSPAR CRYSTAL LAPILLI TUFF
e FELSIC TUFF, FELDSPAR CRYSTAL TUFF
f INTERMEDIATE TO MAFIC FELDSPAR CRYSTAL TUFF, LAPILLI TUFF
g ARGILLITE, GRAPHIC ARGILLITE +/- SULPHIDES
h HETEROLITHIC CONGLOMERATE
i QUARTZ-FELDSPAR CRYSTAL TUFF, CRYSTAL LAPILLI TUFF (MAY BE QUARTZ-FELDSPAR PORPHYRY IN PART)
k LITHIC TUFF, LITHIC TUFFACEOUS SANDSTONE
l LAMINATED TUFF, CHERTY TUFF
m MONOLITHIC LAPILLI TUFF, BRECCIA
n HETEROLITHIC LAPILLI TUFF, BRECCIA
o MASSIVE APHYRIC MAFIC FLOWS
p JASPER, HEMATITE, MAGNETITE CHERT IRON FORMATION
q PYROXENE PORPHYRY (FLOWS AND INTRUSIONS)
r RHYOLITE, DACITE (FLOWS AND INTRUSIONS)
s MASSIVE TUFF, TUFFACEOUS SANDSTONE
t INTERCALATED THINLY BEDDED SANDSTONE, SILTSTONE AND ARGILLITE
u EPICLASTIC SANDSTONE, GRANULE AND PEBBLE CONGLOMERATE
v PILLOWED LAVAS
y CHLORITE SCHIST, TALC-CHLORITE SCHIST (PROTOLITH UNCERTAIN)

NITINAT FORMATION

PsN
a PYROXENE CRYSTAL TUFF, LAPILLI TUFF
b PYROXENE RICH VOLCANIC BRECCIA, AGGLOMERATE
c CHERT, CHERTY TUFF
d FELSIC LAPILLI TUFF, FELDSPAR CRYSTAL LAPILLI TUFF
e FELSIC TUFF, FELDSPAR CRYSTAL TUFF
f INTERMEDIATE TO MAFIC FELDSPAR CRYSTAL TUFF, LAPILLI TUFF
g ARGILLITE, GRAPHIC ARGILLITE +/- SULPHIDES
h HETEROLITHIC CONGLOMERATE
i QUARTZ-FELDSPAR CRYSTAL TUFF, CRYSTAL LAPILLI TUFF (MAY BE QUARTZ-FELDSPAR PORPHYRY IN PART)
k LITHIC TUFF, LITHIC TUFFACEOUS SANDSTONE
l LAMINATED TUFF, CHERTY TUFF
m MONOLITHIC LAPILLI TUFF, BRECCIA
n HETEROLITHIC LAPILLI TUFF, BRECCIA
o MASSIVE APHYRIC MAFIC FLOWS
p PILLOWED FLOWS
q PYROXENE PORPHYRY (FLOWS AND INTRUSIONS)
r RHYOLITE, DACITE (FLOWS AND INTRUSIONS)
s MASSIVE TUFF, TUFFACEOUS SANDSTONE
t EPICLASTIC SANDSTONE, GRANULE AND PEBBLE CONGLOMERATE
v PILLOWED LAVAS
y CHLORITE SCHIST

DUCK LAKE FORMATION

PsD
b PYROXENE RICH VOLCANIC BRECCIA, AGGLOMERATE
c CHERT, CHERTY TUFF
d FELSIC LAPILLI TUFF, CRYSTAL LAPILLI TUFFS
e FELSIC TUFF, FELDSPAR CRYSTAL TUFF
f INTERMEDIATE TO MAFIC FELDSPAR CRYSTAL TUFF, LAPILLI TUFF
g ARGILLITE, GRAPHIC ARGILLITE +/- SULPHIDES
h LITHIC TUFF, LITHIC TUFFACEOUS SANDSTONE
i LAMINATED TUFFS, CHERTY TUFF
m MONOLITHIC LAPILLI TUFF, BRECCIA
n HETEROLITHIC LAPILLI TUFF, BRECCIA
o MASSIVE BASALT
p JASPER
q PYROXENE PORPHYRY (FLOWS AND INTRUSIONS)
r RHYOLITE, DACITE (FLOWS AND INTRUSIONS)
s MASSIVE TUFF, TUFFACEOUS SANDSTONE
v PILLOWED LAVAS
y CHLORITE SCHIST
z PHYLITE

Notes:

- This is a field legend and applies to all six 1:20 000 maps. Not all lithologies listed are present on each map sheet.
- Position in the legend of lithologies within each formation does not imply any age or stratigraphic relationship.
- Where two or more lithologic codes are shown next to an outcrop, the designated units are interbedded and are listed in approximate order of abundance. Where a comma separates two or more lithologic codes, an intrusive relationship is implied.
- Sheets 4 - 9 contain compiled data from various sources. See Sheet 1 for references.

SYMBOLS

Limit of mapping

limit of drift covered area

Geological contact (defined, approximate, assumed, transitional)

Fault (defined, approximate)
downthrown side and relative motion indicated

Reverse and thrust faults (defined, approximate, assumed)
teeth indicate upthrown side, with dip indicated

Shearing and dip

Bedding (horizontal, inclined, vertical, overturned)

Strike and dip of pillow lavas, tops known

Schistosity of unknown age (inclined, vertical)

Lineation of unknown age:
s intersections
c chertic microconcretions
p pillow elongation

Axes of minor folds, plunge indicated.

Anticline (approximate, assumed)
with plunge indicated

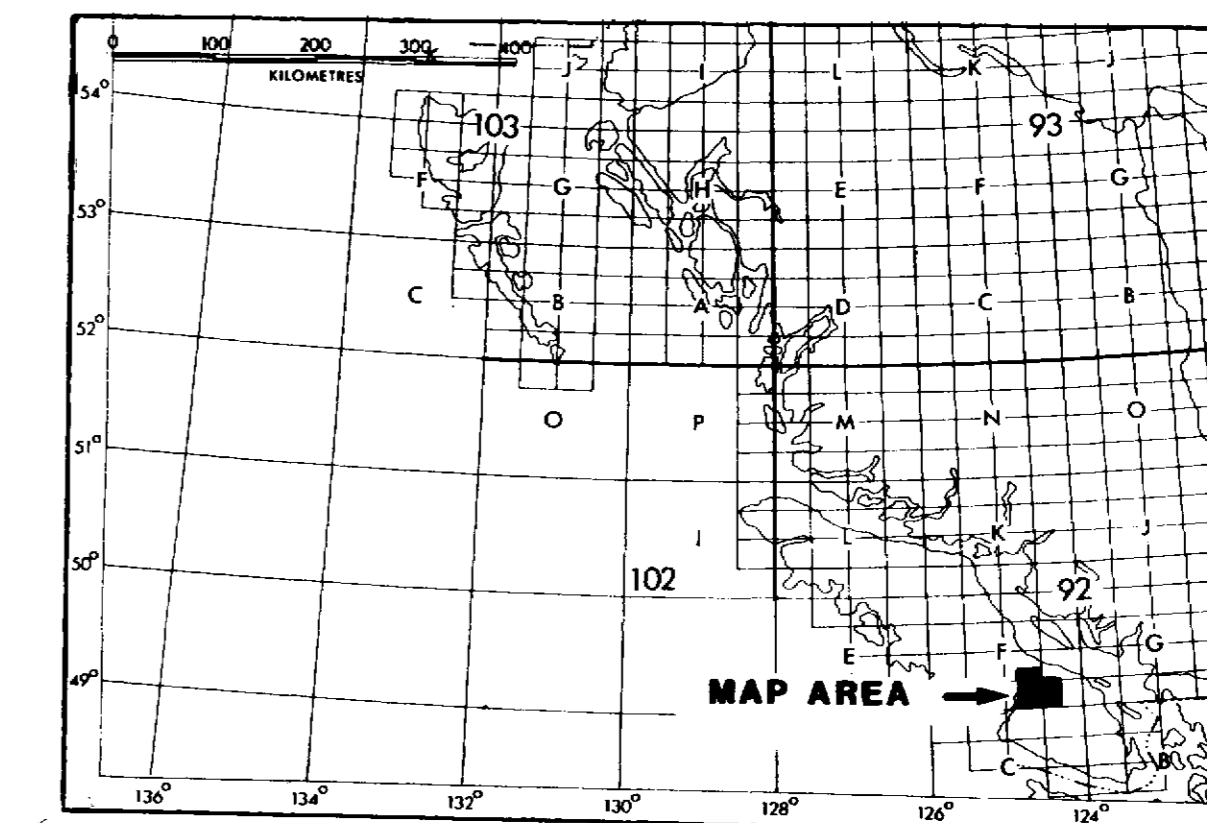
Syncline (approximate, assumed)
with plunge indicated

Anticline and syncline (overturned)

Fossil locality

Adit or tunnel portal

LOCATION MAP



INDEX MAP FOR SHEETS 4 TO 9

