

STRUCTURE :

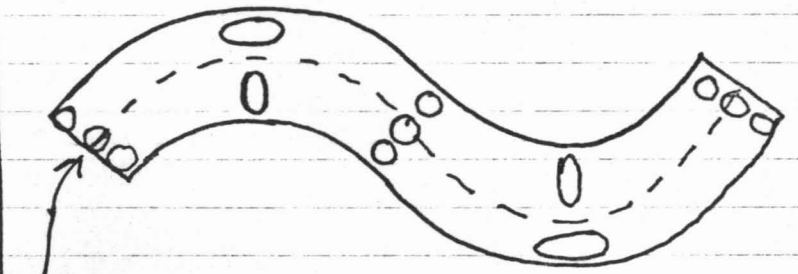
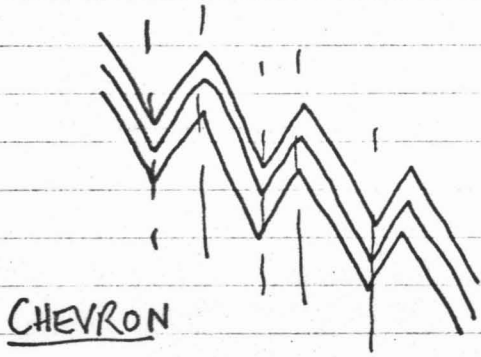
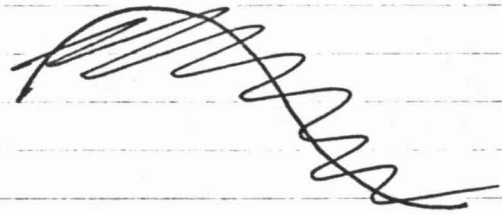
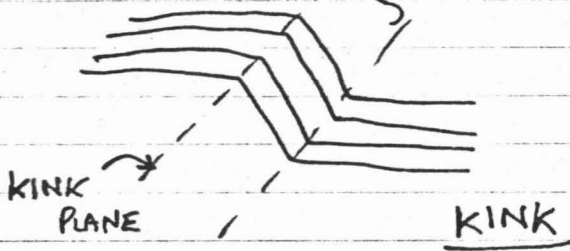
FOLD DESCRIPTION : 1

001586

BRITTLE (NO PLASTIC DEFORMATION OF LAYERS)  
KINK BAND.

DUCTILE

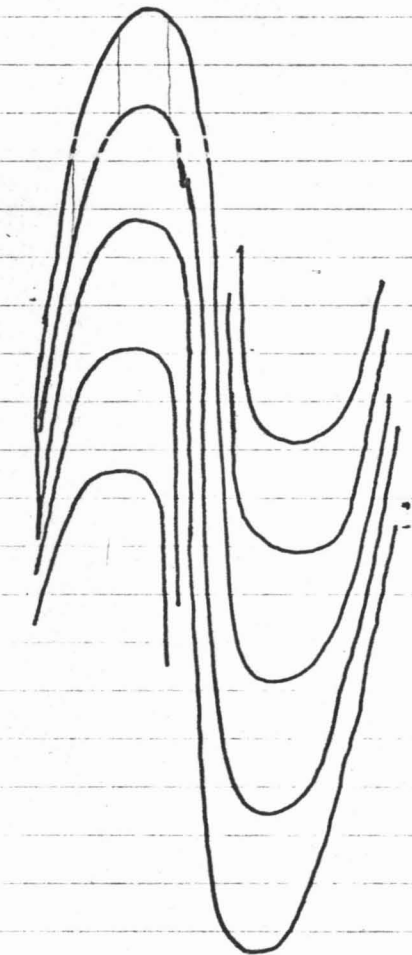
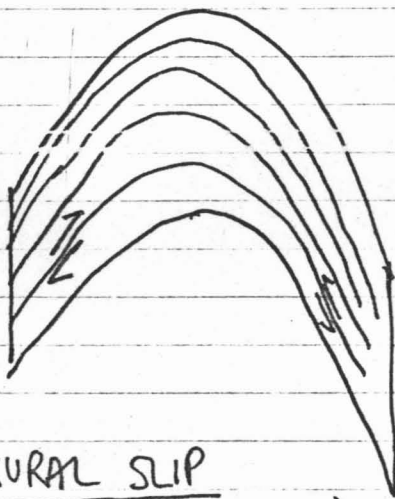
(i.e THINNING + THICKENING OF LAYERS)



CHEVRON

PLANE OF NO FINITE LONGITUDINAL STRAIN

BUCKLE FOLD  
(CONCENTRIC/PARALLEL)

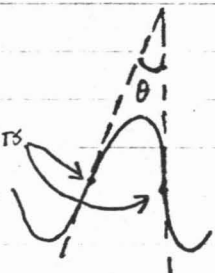


FLEXURAL SLIP  
(e.g PACK OF CARDS)

SIMILAR FOLD  
(FLOW/DUCTILE)

INTERLIMB ANGLES

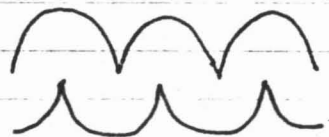
MEASURED FROM INFLEXION POINTS



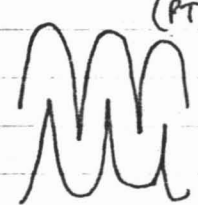
- $\theta = 180^\circ - 120^\circ$  - GENTLE
- $120 - 70$  - OPEN
- $70 - 30$  - CLOSE
- $30 - 0$  - TIGHT
- $\sim 0$  - ISOCLINAL
- NEGATIVE - ELASTICAS.



ELASTICAS  
(PTYGMATIC)  
(BUCKLING OF THIN LAYERS)



CUSP  
(FINAL PRODUCT OF BUCKLING)  
& THICK LAYER

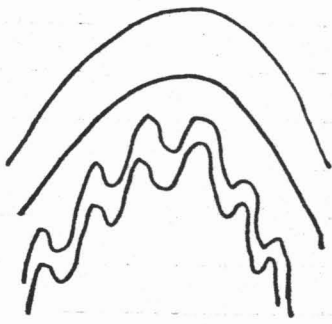


FLATTENED  
BUCKLES (CUSPS)

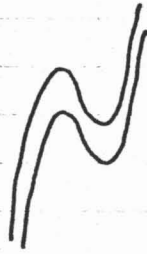
(after M.J. Fleuty, J.G. Ramsay).

NOTE : SCALE + APPARENT INTERLIMB ANGLE IF INFLEXION POINTS NOT PRESENT.

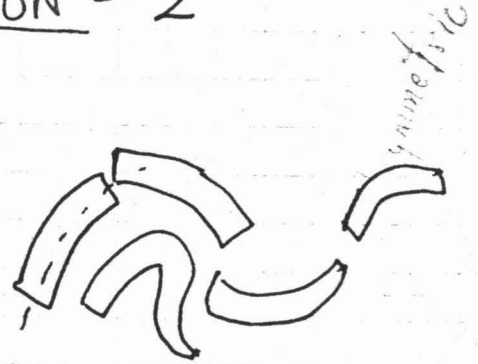
# STRUCTURE : FOLD & CORE DESCRIPTION - 2



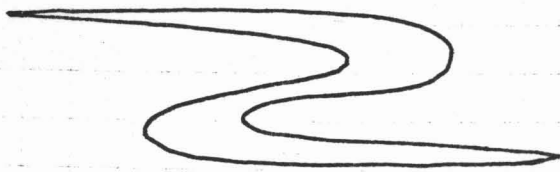
DISHARMONIC FOLDING



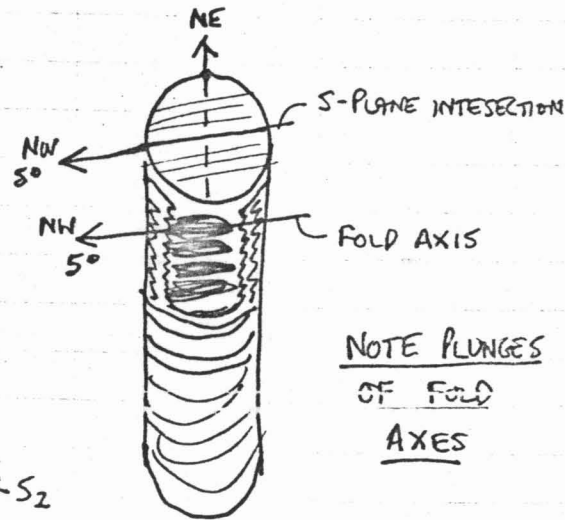
~~ASYMMETRIC~~  
ASYMMETRIC  
(NOTE SYMMETRY)



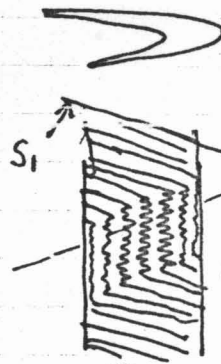
DISRUPTED



ROOTLESS (EUNUCH FOLD)

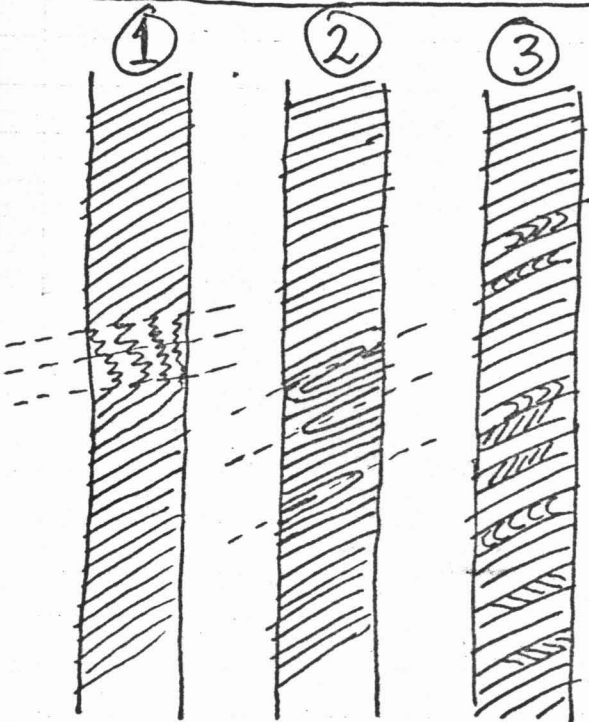


NOTE PLUNGES OF FOLD AXES



BE ESPECIALLY CAREFUL OF MISORIENTING IN THIS CASE.

## TRANSPOSITION OF $S_1 // S_2$



CASE ①

SIGNIFICANT ANGULAR DIFFERENCE BETWEEN  $S_1$  AND  $S_2$ , NOTE ATTITUDE OF BOTH.

BWARE OF EQUATING  $S_1$  WITH  $S_2$

CASE ②

$S_1$  AND  $S_2$  (IF PRESENT) ARE PARALLEL.

NOTE ATTITUDE OF  $RS_1$  IN  $S_2$  COLUMN.

CLUE IS THAT THE BANDING  $// S_2$  IS THE SAME BANDING THAT IS FOLDED ABOUT  $S_2$

CASE ③

$S_2$  CRENULATION CLEAVAGE — BANDING IN LITHONS APPEARS DIFFERENT FROM NEW  $S_2$  MICAS.

NOTE  $CS_2$  ATTITUDE + ATTITUDE &/OR SYMMETRY OF  $S_1$  IF POSSIBLE

$S_1$  NOT  $// S_2$       $S_1 // S_2$  (NO REAL  $S_2$ ?)      $S_2$

1 Icb BIOTITE BANNED + MOTTLED QTZOSE MUSC SCHIST/GNEISS.

2a 2bo QTZITE, GREY, MINOR SULPHIDES < 5%.

2b SULPHIDE BEARING QTZITE 5% — UNTIL FOLIATION LOST.

2bd HIGRADE, GENERALLY RED-BROWN SPHAL RICH

2AO 2bg GRAPHITIC, RIBBON BANNED.

2bc FINE INTERBANNED MASSIVE PYRITE + 2b

2c MASSIVE PYRITE, OPEN SANDY, LIMEATED  
GENERALLY < 5% Pb+Zn

2cb MOTTLED SILICEOUS MASSIVE PYRITE  
NO MICA FOLIATION

2cd 2c WITH DISSEM GAL + SPHAL

2cf 2c WITH DISSEM BARITE 5-7% Pb+Zn

2ce FINE GRANNED MASSIVE PY-MARC, ± Po  
OPEN WITH BILICATE + SULPHIDE FRAGS

2cef + barite

2cm MASSIVE PYRITE + MAGNETITE

2d HIGRADE BANNED BUCKSHOT > 10% Pb+Zn

GRADATION.

2db — + silica mottles

2df) — + dissem barite

2dc — 7-10%

2e MASSIVE PYRRHOTITE ± FINE PY-MARC

(NO GRADE IMPLICATION)

2ef + barite

2f BANNED. BARITE - SULPHIDE ROCK.  
(PY+GAL+SPHAL)

2fb > 50% BARITE

2fd HIGRADE 2f

2fe BANNED BARITE - Po ROCK ± GAL, SPHAL

# KEY

~~~~~

- CONTACT

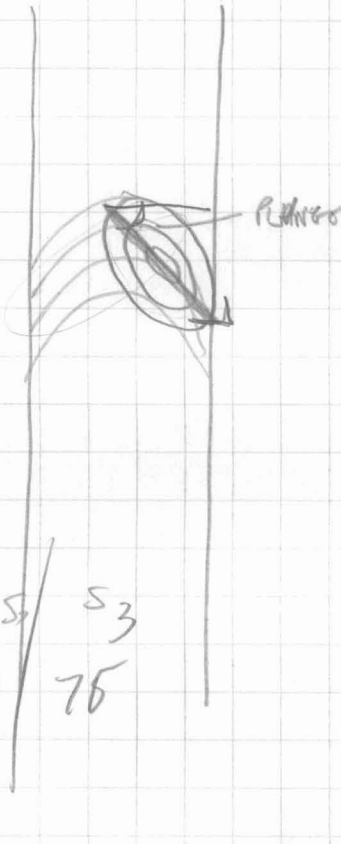
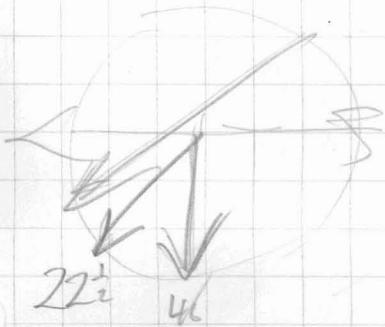


GRADATIONAL CONTACT.



QV

QTZ VERN.



3a

- WHITE / YELLOWISH SERICITE SCHIST + PYRITE

3b

- GREY ANDALUSITE - MUSCOVITE SCHIST

3c

- BIOTITE - MUSC. - AND SCHIST

3d

- GRANITE SCHIST ± CHLASTOLITE, ANDALUSITE.

4a

- chlorite - actinolite schist

4b

- chlorite schist

5a

- CSG

# STRUCTURE

## FEATURES

- S 0 BEDDING
- S 1
- S 2
- S 3
- S 4
- S 5
- F 1-5 FOLD AXES, S-PLANE INTERSECTIONS, ETC, FOR  $D_{1-5}$
- W FAULT
- B BRECCIA
- T TENSION FISSURES

## QUALIFIERS

- P PERVASIVE
- C CRENCLEAVAGE, NOTE ~~FOLDED S<sub>1-4</sub> SYMMETRY OR ATTITUDE, IF PLANAR,~~ PREVIOUS S-PLANE ATTITUDE OR FOLD SYMMETRY IF POSSIBLE.
- O OTHER FABRIC
- ? FABRIC OF DOUBIOUS AFFINITY, NOTE WHY.
- K KINK PLANE, NOTE SYMMETRY.
- R 0-5 FEATURES OF ' $D_{0-5}$ ' AGE, NOTE WHY.
- e.g. R S 1 CLEAVAGE APPARENTLY TRANSPOSED // TO LATER CLEAVAGE, SPECIFICALLY  $S_1$  TRANSPOSED //  $S_2$ ,  $S_2$  ATTITUDE NOTED. -

## COMMENTS

- SYMMETRIES OF ALL FOLDS OTHER THAN  $D_2$
- SUCKENSIDE PLUNGE ON FAULTS
- ATTITUDES OF ALL PLANAR SURFACES OTHER THAN  $S_1$  AND  $S_2$
- DESCRIBE SCALE + INTERLIMB ANGLE OF FOLDS.
- DUCTILE vs BRITTLE (i.e. KINK, CHEVRON, FLEX SLIP)
- ↳ SIMILAR <sup>BUCKLES</sup> FLATTENED BUCKLES, ETC
- WIDTH OF KINK BANDS.

TABLE III  
Stratigraphic Column, Anvil Range

| Period                           | Map-unit                                        | Lithology                                                                         | Thickness (feet) |
|----------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------|------------------|
| Quaternary                       | 13                                              | Overburden                                                                        |                  |
|                                  | Unconformity, in part                           |                                                                                   |                  |
| Quaternary                       | 13a                                             | Breccio-conglomerate with oxide rich matrix,<br>Unconsolidated limonitic mud      | 50+              |
|                                  | Unconformity                                    |                                                                                   |                  |
| Cretaceous-<br>Tertiary          | 12                                              | Hornblende porphyry                                                               |                  |
|                                  | Intrusive contact with units 1, 2 and 11        |                                                                                   |                  |
| Cretaceous                       | 11                                              | ANVIL BATHOLITH and associated intrusions                                         |                  |
|                                  | 11b                                             | Prophyritic quartz-monzontie                                                      |                  |
|                                  | Intrusive contact with units 1, 2, 3, 6 and 11a |                                                                                   |                  |
|                                  | 11a                                             | Muscovite-biotite granodionite, in part foliated                                  |                  |
|                                  | Intrusive contact with units 1 and 2            |                                                                                   |                  |
| Ordovician?<br>and later         | 10                                              | Rhyolitic intrusives and extrusives                                               |                  |
|                                  | 10c                                             | Welded crystal tuff                                                               | 0-100+?          |
|                                  | Thrust contact (?) with unit 4                  |                                                                                   |                  |
|                                  | 10b                                             | Altered biotite-quartz-feldspar-porphyry                                          |                  |
|                                  | Intrusive contact with units 8 and 9            |                                                                                   |                  |
|                                  | 10a                                             | Quartz-porphyry, in part foliated, and microgranite                               |                  |
|                                  | Intrusive contact with units 5 and 6            |                                                                                   |                  |
| Mississippian?<br>or Triassic    | 9                                               | Facies present include:-                                                          | 5000+?           |
|                                  | R<br>( 9c<br>9b<br>9a                           | 9c Interbedded greywacke and shale, minor conglomerate, with Triassic pelecypods. |                  |
|                                  |                                                 | 9b Massive, thick bedded siltstones and sandstones                                |                  |
|                                  |                                                 | 9a Thin bedded, flysch-type, greywackes and shales                                |                  |
|                                  | Unconformity                                    |                                                                                   |                  |
| Mississippian-<br>Permian?       | 8                                               | Facies present include:-                                                          | 2000+            |
|                                  | Earm<br>GP<br>( 8d<br>8c<br>8b<br>8a            | 8d Aplite, tuff, hydrothermal breccia                                             | minor            |
|                                  |                                                 | 8c Black siliceous slate                                                          | minor            |
|                                  |                                                 | 8b Bleached (?), pyritic chert                                                    |                  |
|                                  |                                                 | 8a Interbedded grey and black chert, and black slate, minor limestone.            |                  |
|                                  | Conformably (?) overlying                       |                                                                                   |                  |
| Upper Devonian-<br>Mississippian | 7                                               | KALZAS FORMATION, including                                                       | 2000             |
|                                  | Earm<br>GP<br>( 7b<br>7a                        | 7b Interbedded limestone, quartzite and slate                                     |                  |
|                                  |                                                 | 7a Calcareous slate                                                               |                  |

Conformably (? - Crystal Peak Formation apparently absent) overlying

|                  |             |    |                                                   |          |
|------------------|-------------|----|---------------------------------------------------|----------|
| Ordovician? -    | 6           |    | Facies present include                            | 0-3000+? |
| Devonian?        |             | 6g | Sulphide - bearing siliceous exhalite             | minor    |
|                  |             | 6f | Schistose felsic metavolcanic rock                | minor    |
|                  |             | 6e | Sparkling orthoquartzite                          |          |
| UNITS 5 - 8 inc. | <i>Earn</i> | 6d | Fissile, quartz-eye bearing, volcanoclastic wacke |          |
| EARN GROUP       | <i>GP</i>   | 6c | Aplitic welded siliceous tuff and/or rhyolite     |          |
|                  |             | 6b | Banded siliceous tuff                             |          |
|                  |             | 6a | Eutaxitic tuffaceous (?) chert and slate          |          |

Facies equivalent of

|               |   |    |                                                                                                                                                                    |        |
|---------------|---|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Ordovician? - | 5 |    | Facies present include                                                                                                                                             | 5000+? |
| Devonian      |   | 5e | Interbedded grey impure limestone and slate, calcareous tuffaceous slate, silty dolomitic? limestone, and grey bioclastic limestone with Middle Devonian crinoids. | minor  |
|               |   | 5d | Black and grey cherts with slate partings, bedded breccio-conglomerate                                                                                             |        |
|               |   | 5c | Brown slate with Ordovician-Silurian graptolites                                                                                                                   | minor  |
|               |   | 5b | Interbedded siltstones and shales                                                                                                                                  |        |
|               |   | 5a | Black argillaceous cherts and siliceous slates.                                                                                                                    |        |

*Pissinck Pond*

*Earn GP.*

*Howards Pass*

*partly Pissinck Pond*

*mostly Earn GP*

Conformably (?) overlying, facies equivalent (?) of, and in part underlying

|               |   |    |                                                               |        |
|---------------|---|----|---------------------------------------------------------------|--------|
| Ordovician? - | 4 |    | Facies present include                                        | 5000+? |
| Devonian?     |   | 4g | Coarse basic-intermediate intrusive plugs and dykes.          |        |
|               |   | 4f | Massive to schistose intermediate greenstones (metatuffs?)    |        |
|               |   | 4e | Metamorphosed hydrothermally altered volcanic rocks           |        |
|               |   | 4d | Sheared, carbonatized volcanic rocks                          |        |
|               |   | 4c | Subaqueous, banded; silicic tuffs and tuffwackes.             |        |
|               |   | 4b | Intermediate-acid fragmental volcanic rocks (pillow-breccias) |        |
|               |   | 4a | Basic-intermediate pillowed and massive flows.                |        |

*Mag Mill*

*KD on*

*ACP*

## Facies equivalent of (compare facies of unit 4)

|                            |    |    |                                                                   |          |
|----------------------------|----|----|-------------------------------------------------------------------|----------|
| Ordovician? -<br>Devonian? | 3  |    | Facies present include                                            | 0-5000+? |
|                            | SC | 3f | Massive to schistose intermediate greenstones<br>(metatuffs?)     |          |
|                            | SF | 3e | Chloritic phyllite (metatuffs and tuffwackes?)                    |          |
|                            | SC | 3d | Coarse basic-intermediate intrusive plugs and dykes               |          |
|                            | SD | 3c | Subaqueous, banded, silicic tuffs                                 |          |
|                            | SC | 3b | Amphibolite gneiss and chloritic schist, (minor<br>relic breccia) |          |
|                            | SC | 3a | Massive, basic-intermediate greenstones (meta-flows?)             |          |

## Interbedded with and facies equivalent of

|                               |              |     |                                                   |       |
|-------------------------------|--------------|-----|---------------------------------------------------|-------|
| Ordovician?-<br>Devonian?     | 2            |     | Facies present include                            | 5000+ |
|                               | 3G           | 2h  | Andalusite porphyroblast phyllonite(?)            |       |
|                               |              | 2g  | Greywacke, pebble conglomerate                    | minor |
| UNITS 1-4 inc.                |              | 2f  | Interbedded siltstones and slates                 |       |
| FARO METAMOR-<br>PHIC COMPLEX | SB           | 2e  | Limy, thin-bedded phyllite                        |       |
|                               | 3E - SA etc  | 2d  | Graphitic phyllite                                |       |
|                               | SB           | 2c  | Limy phyllite, transposed bedding                 |       |
|                               | 3G           | 2b  | Muscovite-chlorite phyllite                       |       |
|                               | mostly<br>1G | (2a | Biotite-muscovite schist $\pm$ garnet, staurolite |       |

## Facies (?) equivalent of, and interbedded (?) with

|                            |    |    |                                                                                         |       |
|----------------------------|----|----|-----------------------------------------------------------------------------------------|-------|
| Ordovician? -<br>Devonian? | 1  |    | Facies present include                                                                  | 5000+ |
|                            | 3D | 1b | Buff and grey marble and limestone, minor inter-<br>bedded calcsilicate rocks and tuffs |       |
|                            | 3D | 1a | Calcsilicate gneiss and phyllite, minor schist<br>(2a), phyllite (2b) and marble (1b)   |       |

Base of metamorphic complex not seen