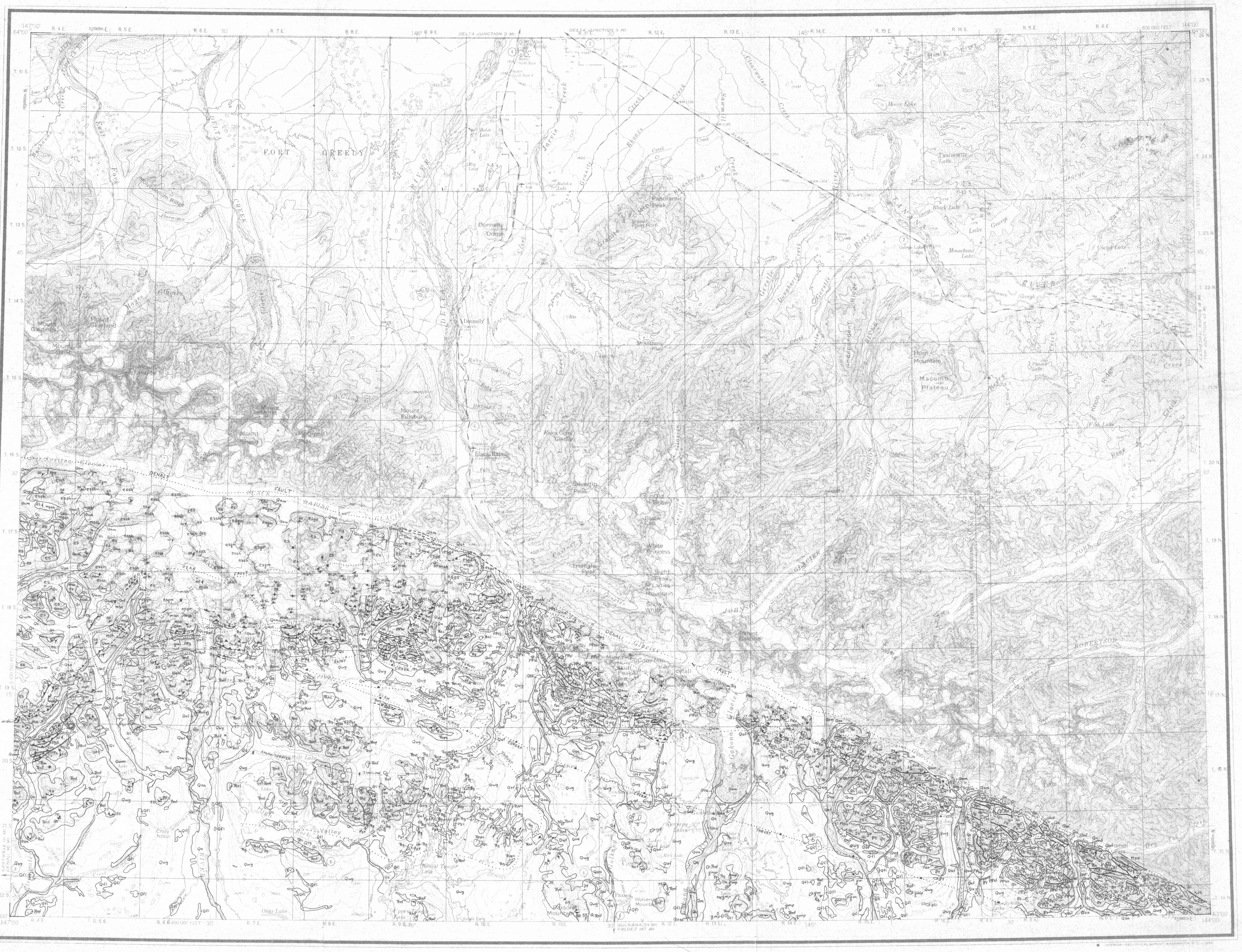
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT
82-52
SHEET 1 OF 1

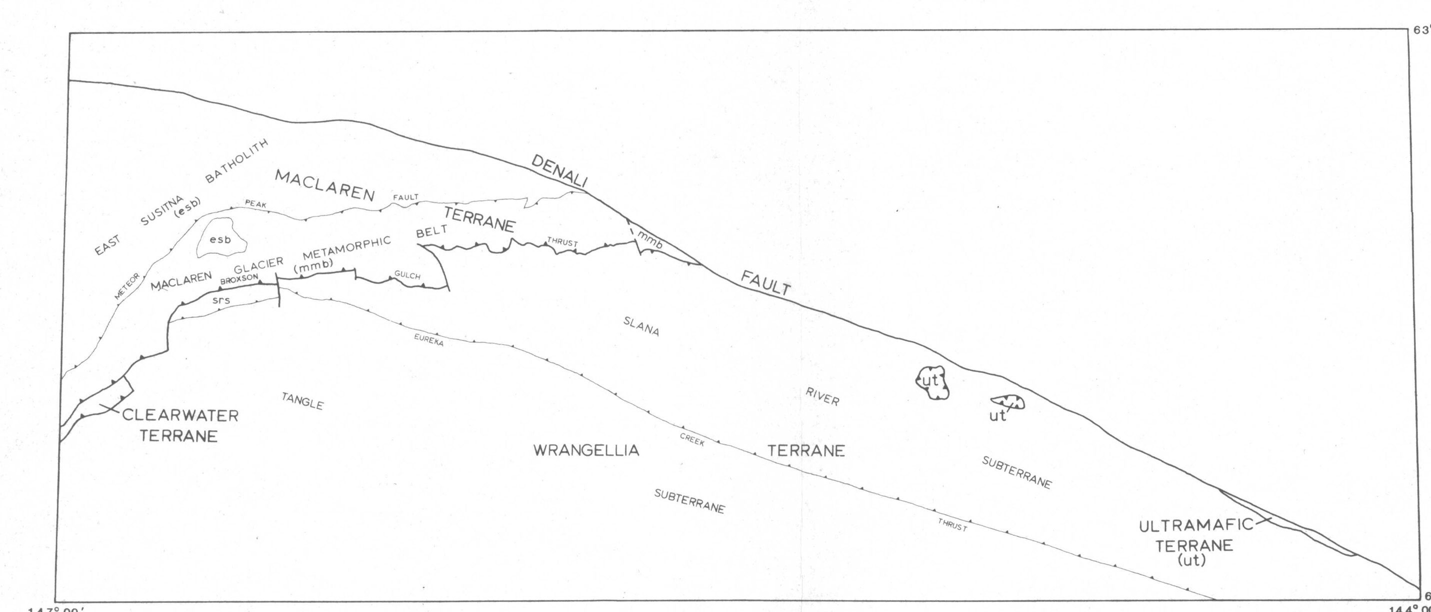


Base from USGS 1:250,000 topo series
Mount Hayes (1955)

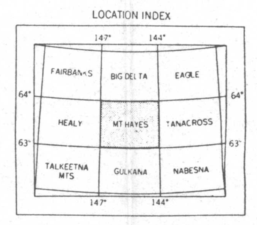
SCALE 1:250000
5 0 5 10 15 20 25 MILES
5 0 5 10 15 20 25 KILOMETERS
CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL
1955 MAGNETIC DECLINATION AT SOUTH EDGE OF SHEET VARIES FROM 28°00' TO 29°30' EAST

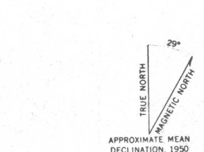
ROAD CLASSIFICATION
MEDIUM DUTY ... LIGHT DUTY ...
UNIMPROVED DIRT
STATE ROUTE

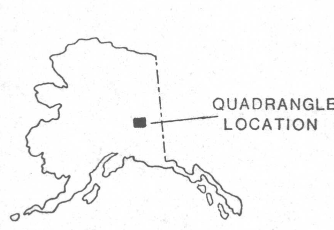
MT. HAYES, ALASKA
N6300-W14400/60X180
1955



GENERALIZED MAP SHOWING TECTONO-STRATIGRAPHIC TERRANES
IN SOUTHERN PART OF MOUNT HAYES QUADRANGLE, ALASKA







Geology mapped by N.R.D. Albert, 1978, G.C. Bond, 1962-64, 1966-72, P.L. Herzon, 1979, R.T. Miyaoka, 1979, W.H. Nelson, 1979, W.J. Nokleberg, 1978-79, D.H. Richter, 1966-67, 1972-74, T.E. Smith, 1964, 1968-71, J.E. Stout, 1964, 1971, 1973, Warren Yeend, 1979-80, R.E. Zehner, 1979.

GEOLOGIC MAP OF THE SOUTHERN PART OF THE MOUNT HAYES QUADRANGLE, ALASKA

By

Warren J. Nokleberg, Nairn R.D. Albert, Gerard C. Bond, Paige L. Herzon, Ronny T. Miyaoka,

Willis H. Nelson, Donald H. Richter, Thomas E. Smith, James H. Stout, Warren Yeend, and Richard E. Zehner

1982

This report (map) is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards (and stratigraphic nomenclature)

CORRELATION OF MAP UNITS

SURFICIAL DEPOSITS

Qa, Qoa, Qaf, Qfl, Ql, Qc, Qrg, Qam — Holocene
Qwm, Qwg, Qwf — Holocene and Pleistocene
Qog — Pleistocene
QUATERNARY

SEDIMENTARY, IGNEOUS, AND METAMORPHIC ROCKS OF INDIVIDUAL TERRANES

Maclaren Terrane

East Susitna Batholith: es, esgd, esqm, mig, mgsh, essh — TERTIARY AND CRETACEOUS
Maclaren Glacier Metamorphic Belt: msh, mph, ma — PRE-CRETACEOUS
Roof Pendant: sqa — TRIASSIC(?)

Clearwater Terrane

ccs, cms, cm, cgs — UPPER TRIASSIC

Wrangellia Terrane

Ts — Pliocene
Tc — Eocene and Oligocene
Disconformity
Ti — Eocene and Oligocene
Intrusive Contact
Tv — Eocene and Oligocene
TERTIARY
Angular Unconformity

Slana River Subterrane
KJs — LOWER CRETACEOUS AND UPPER JURASSIC
Disconformity
JTRm — UPPER JURASSIC AND LOWER TRIASSIC
Fault
TRl
TRg; TRoc, TRopc, TRppc
Intrusive Contact
TRn
Tangle Subterrane
TRnf, TRnfs, TRnp
Disconformity
UPPER TRIASSIC

Mankomen Group
Pe (Pea, Pel): Peua, Peul, Pela, Pell — PERMIAN
Pda — PERMIAN
PIPs: PIPsu, PIPsl — PERMIAN AND PENNSYLVANIAN
IPt — PENNSYLVANIAN

Pzt, Pzl, Pzb — UPPER PALEOZOIC

Terrane of Ultramafic and Associated Rocks

Mzq
Intrusive Contact
ums
ump, umd
Mza
MESOZOIC

INTRUSIVE PLUTONIC ROCKS AND MELANGE

m — TERTIARY
Tqm, Tdp — TERTIARY
gm, gmp, gd, di, gb, db — CRETACEOUS (?) AND JURASSIC (?)

DEFINITION OF MAP UNITS

SURFICIAL DEPOSITS

ALLUVIAL DEPOSITS
- Qa — Alluvium on active flood plains and lowest terraces of major streams, and larger alluvial fans
- Qaf — Alluvial fans and cones, chiefly gravel and sand
- Qoa — Alluvium in high terraces along major streams
- Qfl — FLUVIOLACUSTRINE DEPOSITS

COLLUVIAL DEPOSITS
- Ql — Landslide deposits
- Qc — Undivided colluvium and other deposits on valley walls and hill slopes
- Qrg — ROCK GLACIER DEPOSITS

GLACIAL DEPOSITS
- Qam — End and lateral moraines of the Alaskan Glaciation
- Qwg — Drift of Wisconsin Glaciation
- Qwf — Glaciofluvial deposits of Wisconsin Glaciation
- Qwm — End and lateral moraines of Wisconsin Glaciation
- Qog — Drift of older glaciations

MACLAREN TERRANE

SOUTH OF DENALI FAULT AND NORTH OF BROXSON GULCH THRUST

EAST SUSITNA BATHOLITH AND SCHIST, QUARTZITE, AND AMPHIBOLITE

SOUTH OF DENALI FAULT AND NORTH OF METEOR PEAK FAULT
- es — SCHISTOSE GRANITIC ROCK
- esgd — SCHISTOSE GRANODIORITE
- esqm — SCHISTOSE QUARTZ MONZONITE
- essh — SCHIST AND AMPHIBOLITE
- mig — MIGMATITE
- mgsh — MIGMATITIC SCHIST
- sqa — SCHIST, QUARTZITE, AND AMPHIBOLITE

MACLAREN GLACIER METAMORPHIC BELT

SOUTH OF METEOR PEAK FAULT AND NORTH OF BROXSON GULCH THRUST
- msh — SCHIST AND AMPHIBOLITE
- mph — PHYLLITE
- ma — ARGILLITE AND METAGRAYWACKE

CLEARWATER TERRANE

WITHIN BRANCHES OF BROXSON GULCH THRUST
- ccs — CHLORITE SCHIST
- cms — MUSCOVITE SCHIST
- cm — MARBLE
- cgs — GREENSTONE

WRANGELLIA TERRANE

SOUTH OF DENALI FAULT

SANDSTONE, CONGLOMERATE, AND RHYODACITE TO DACITE TUFF, BRECCIA, AND FLOWS
- Ts — Sandstone
- Tc — Conglomerate
- Tv — Rhyodacite and dacite tuff, breccia, agglomerate, flows, and dikes and sills
- Ti — RHYODACITE AND DACITE DIKES AND SILLS
- JTRm — McCARTHY FORMATION

INTRUSIVE GABBRO AND CUMULATE MAFIC AND ULTRAMAFIC ROCK
- TRg — Intrusive gabbro
- TRoc — Olivine cumulate
- TRopc — Olivine-pyroxene cumulate
- TRppc — Pyroxene-plagioclase cumulate

SLANA RIVER SUBTERRANE

SOUTH OF DENALI FAULT AND NORTH OF EUREKA CREEK FAULT
- KJs — MARINE SEDIMENTARY ROCKS
- TRl — LIMESTONE
- TRn — NIKOLAI GREENSTONE

MANKOMMEN GROUP
- Pe — EAGLE CREEK FORMATION
- Pea — Undifferentiated argillite of either upper or lower argillite member
- Pel — Undifferentiated limestone of either upper or lower limestone member
- Peua — Upper argillite member
- Peul — Upper limestone member
- Pela — Lower argillite member
- Pell — Lower limestone member
- Pda — SHALLOW-LEVEL DACITE STOCKS DIKES AND SILLS
- PIPs — SLANA SPUR FORMATION
- PIPsu — Upper calcareous volcaniclastic member
- PIPsl — Lower volcaniclastic member
- IPt — TETELNA VOLCANICS

TANGLE SUBTERRANE

SOUTH OF EUREKA CREEK FAULT
- TRnf — SUBAERIAL BASALT FLOWS OF NIKOLAI GREENSTONE
- TRnfs — SHALE, CHERT, AND SILTSTONE
- TRnp — PILLOW BASALT FLOWS OF NIKOLAI GREENSTONE
- PzT — AQUAGENE TUFF, ARGILLITE, LIMESTONE, CHERT, ANDESITE TUFF, AND GREENSTONE
- Pzl — Limestone
- Pzb — Metabasalt

PLUTONIC ROCKS AND MELANGE

Occur in Maclaren River, Clearwater, and Wrangellia terranes
- Tqm — QUARTZ MONZONITE
- Tdp — DACITE PORPHYRY DIKES

PLUTONIC AND SHALLOW INTRUSIVE ROCKS
- gm — Quartz monzonite
- gmp — Quartz monzonite porphyry
- gd — Granodiorite
- di — Diorite and quartz diorite
- gb — Gabbro
- db — Diabase
- m — MELANGE Occurs generally within branches of Broxson Gulch thrust.

TERRANE OF ULTRAMAFIC AND ASSOCIATED ROCKS
- Mzq — TONALITE AND QUARTZ MONZONITE
- ums — SERPENTINITE
- ump — PYROXENITE AND PERIDOTITE
- umd — DUNITE
- Mza — AMPHIBOLITE AND HORNBLENDE-PLAGIOCLASE GNEISS

GEOLOGIC MAP SYMBOLS

- Contact--Dotted where concealed
- Fault--Dashed where approximately located; dotted where concealed
- Thrust fault--Dashed where approximately located; dotted where concealed; sawteeth on upper plate
- Normal fault--Dashed where approximately located; dotted where concealed; ball and bar on downthrown side
- Form line--Showing surface trace of distinctive marker bed
- Anticline--Showing direction of plunge; dashed where approximately located; dotted where concealed
- Overturned anticline--Showing direction of dip of limbs
- Syncline--Showing direction of plunge; dashed where approximately located; dotted where concealed

Strike and dip of beds
Inclined 60 — Vertical

Strike and dip of schistosity
Inclined 30 — Vertical

Bearing and plunge of fold axis
Inclined 25 — Vertical 90

Strike and dip of joints
Inclined 40 — Vertical