

EXPLANATION

IGNEOUS ROCKS

rgf

Riebeckite granite
Light gray to light brown, fine-grained, locally porphyritic riebeckite granite composed of quartz, plagioclase and riebeckite with orthoclase phenocrysts.

db

Diabase
Greenish-black to black, fine-grained, porphyritic diabase composed of augite, labradorite, granophyre and magnetite with orthoclase phenocrysts.

d

Camptonite dike
Greenish-black to black, aphanitic to fine-grained phenitic, locally porphyritic dikes composed of oligoclase-andesine, augite, oxy-hornblende, biotite and ilmeno-magnetite with oxy-hornblende, titan-augite, and andesine phenocrysts; generally pyrrhotite.

p

Pegmatite
White, very coarse, massive pegmatite composed of microcline, albite quartz, muscovite, biotite and black tourmaline.

sn

Sweepstake norite
Dark purplish-gray to black, coarse grained, massive norite composed of labradorite, hypersthene and augite.

edi
ipdi
sdi

Diorite
Exeter diorite (edi): mottled dark greenish-gray, coarse grained generally massive diorite composed of biotite hornblende, oligoclase and quartz.
Island Pond diorite (ipdi): mottled dark greenish-gray to black, coarse grained, massive diorite composed of biotite, hornblende, actinolite, augite and andesine-labradorite.
Sweepstake diorite (sdi): mottled light to dark greenish or purplish-gray medium to coarse-grained diorite with both massive and foliated textures. It is composed of biotite, actinolite, andesine-labradorite and quartz.

qm
ippqm
agd

Quartz monzonite
Quartz monzonite (qm): light gray to light brown, medium-grained, massive to moderately foliated quartz monzonite composed of quartz, microcline, oligoclase, biotite and muscovite.
Island Pond porphyritic quartz monzonite (ippqm): light creamy gray to dark greenish-gray, coarse-grained, foliated quartz monzonite with a porphyritic texture. It is composed of quartz, microcline, oligoclase, and biotite with microcline phenocrysts.
Ayer granodiorite (agd): creamy to bluish-gray, coarse-grained, slightly foliated quartz monzonite with a porphyritic texture. It is composed of quartz, oligoclase-andesine, microcline, biotite and muscovite with microcline phenocrysts.

bgm
bgf

Two-mica granite
Light gray to light brown, medium to coarse-grained, massive (bgm) intensely foliated (bgf), two-mica (binary) granite composed of quartz, microcline, oligoclase, biotite and muscovite with microcline phenocrysts common in the foliated granite (bgf).

METAMORPHIC ROCKS

Sb

Berwick formation
Brownish-gray, medium to fine-grained schist composed of quartz, biotite, chlorite, oligoclase and almandine. Thin lenses of calc-silicate rock are mottled dark green and white and are composed of actinolite quartz, andesine diopside, calcite and sphene.

Sphy

Phyllite member (Eliot fm?)
Shiny gray to brown, very fine-grained, crenulated phyllite composed primarily of muscovite and chlorite with some quartz, calcite and pyrite.

Se

Eliot formation
Primarily purplish-brown, medium to fine-grained schists composed of quartz, biotite, chlorite, oligoclase and actinolite. Minor amounts of light greenish-gray lenses of medium to fine-grained calc-silicate rock are composed of quartz, actinolite, oligoclase-andesine, calcite and sphene.
Garnet and diopside are indicator minerals present in schists and calc-silicate rocks in the garnet zone.

METAMORPHIC ZONES

Chlorite zone (?)

Biotite zone

Garnet zone

(Shown by biotite and garnet isograds)

CONTACTS

Accurate

Approximate

Projected

STRUCTURAL SYMBOLS

Inclined Vertical

Strike and dip of bedding (S₁)

Inclined Vertical Horizontal

Strike and dip of foliation (both S₂ and S₃) in both metamorphic and igneous rocks

Inclined Vertical

Strike and dip of cleavage

Inclined Vertical

Strike and dip of joints

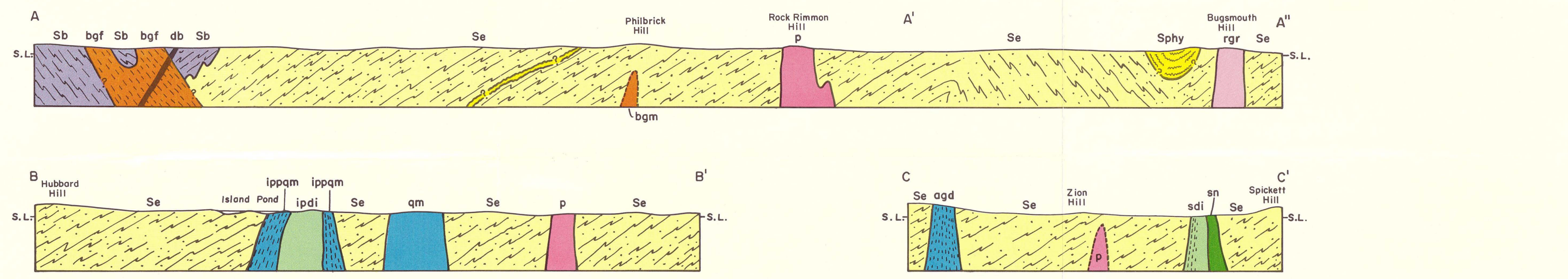
Inclined Horizontal

Bearing and plunge of lineations

Inclined Horizontal

Strike and dip of fold axial plane and trend and plunge of fold axis

Quarries Silicified zone

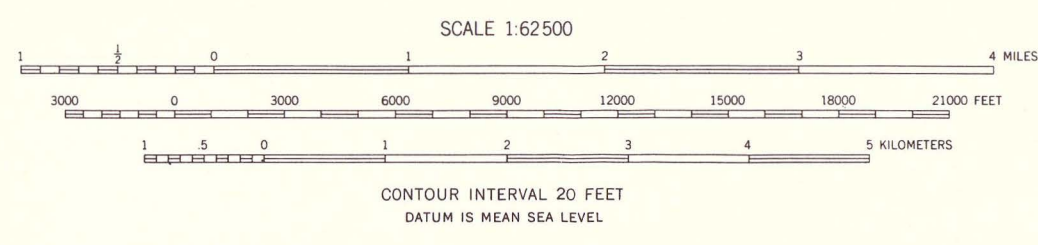
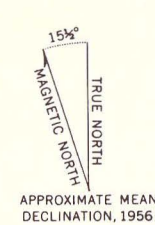


GEOLOGIC MAP AND STRUCTURE SECTIONS OF THE HAVERHILL 15' QUADRANGLE, SOUTHEASTERN NEW HAMPSHIRE

G-150-057-062500-BMAP

Design and drafting of map by Graphic Arts Section
Department of Resources and Economic Development

Topographic base by U. S. Geological Survey



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Directed by Indiana University
Department of Geology
Geology surveyed 1967-1968 with funds supplied by the State of New Hampshire and the Geological Society of America Penrose Bequest