SCALE 1:24 000

CONTOUR INTERVAL 6 METERS

Base from U.S. Geological Survey

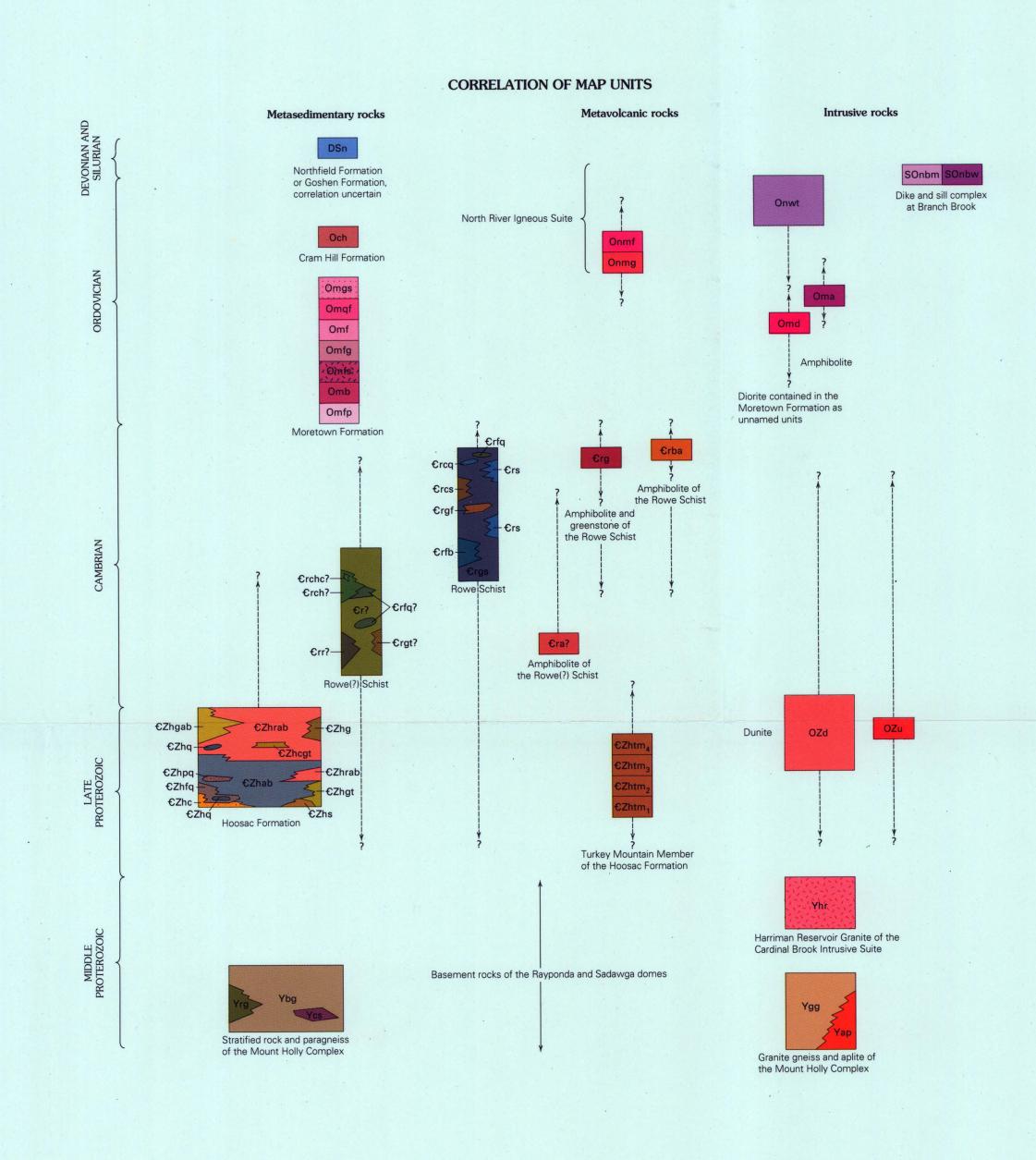
1927 North American Datum

Universal Transverse Mercator projection

provisional edition

Jacksonville, 1987, provisional edition; West Dover, 1986,

10,000-foot grid ticks based on Vermont coordinate system. 1000-meter Universal Transverse Mercator grid, zone 18



DESCRIPTION OF MAP UNITS

Northfield Formation (Devonian to Silurian?)—Gray to dark-gray, graphitic garnet-chlorite-quartz-muscovite±pyrite schist and phyllite. Garnets 1 to 6 mm in diameter are abundant and produce distinctive bumps on foliation surfaces. Locally includes 10-cm- to 1-m-thick beds of vitreous, white-weathering, light-gray quartzite containing abundant detrital blue-quartz grains and discontinuous lenses of quartz-pebble conglomerate 1 m thick. Lower part of unit is locally intruded by dikes of

Intrusive rocks of the North River Igneous Suite (Silurian? to Ordovician)—Dike and sill complex at Branch Brook Blue Mountain facies—Dark-gray to black, poorly layered, porphyritic to nonporphyritic ilmenite-epidote-chlorite-plagioclase-hornblende amphibolite. Porphyritic layers contain 1- to 10-mm, euhedral to subhedral, tabular plagioclase phenocrysts comprising 1 to 60 volume percent of the rock. Some porphyritic layers have nonporphyritic chill margins. Layers in composite dikes and sills typically have sharp crosscutting contacts. SOnbm unit contains several inclusions of the felsic Onmf unit that may be igneous segregations or sedimentary xenoliths. The upper part contains several small dikes of Onwt

Whitneyville facies-Light- to medium-green, massive epidote-ilmenitesphene-chlorite-hornblende-plagioclase±chalcopyrite±calcite amphibolite. Commonly porphyritic with a glomeroporphyritic texture defined by fine-grained groundmass and 5- to 10-mm, euhedral, tabular, clustered plagioclase phenocrysts comprising 5 to 50 volume percent of the entire rock. Nonporphyritic near its basal contact with Onwt. SOnbw also occurs as series of anastomosing dikes or sills that have 1mm- to 1-m-thick chill margins lacking plagioclase phenocrysts near contact with Cram Hill Formation. Contains several large (>1 m thick) and numerous small dikes of Onwt, especially near contact with the main body of trondhjemite Intrusive rocks of the North River Igneous Suite proper (Ordovician) West Halifax Trondhjemite—Cream-weathered, light- to dark-gray,

coarse-grained, equigranular, massive ilmenite-chlorite-epidote-muscovite-quartz-plagioclase trondhjemite with hypidiomorphic texture. Color change locally gradational. Onwt intrudes all other units of the North River Igneous Suite and the Cram Hill Formation Metavolcanic rocks of the North River Igneous Suite proper (Ordovician) Quartz-feldspar granofels-Light-brown to tan, granulose, equigranular

ring as 1- to 5-m-thick layers within SOnbm. Interpreted as xenoliths of metasedimentary rock intruded by the SOnbm dike complex of the Blue Mountain facies Massive gneiss—White to light-gray, slightly rusty weathering, well-foliated to blastomylonitic, poorly layered garnet-biotite-muscovite-chloritequartz-plagioclase granofels that locally contains minor amounts of hornblende, ilmenite, and sulfide minerals. Here, garnets typically form small, 2- to 6-mm porphyroblasts. In blastomylonitic gneiss along the South Newfane thrust zone, quartz and plagioclase form large aggregates or augen and chlorite, biotite, and hornblende form a well-developed lineation. Unit occurs as small isolated screens within and beneath

chlorite-ilmenite-muscovite-quartz-plagioclase granofels typically occur-

Cram Hill Formation (Ordovician)—Homogeneous, rusty, tan- to darkgray-weathering, pyritiferous, carbonaceous ilmenite-chlorite-plagioclase-muscovite-quartz schist that has a distinctive fissile parting along cleavage surfaces. Locally contains 1- to 10-cm-thick plagioclase-quartzmuscovite granofels layers that may be graded and contain abundant, angular and rounded blue-quartz pebbles 1 mm to 3.5 cm in diameter. Och is typically crosscut by mafic dikes and sills (SOnbw and SOnbm) 1 to more than 100 m thick Moretown Formation (Ordovician)

Omgs: Garnet schist—Rusty-weathered, silver-gray to light-gray biotite-chloritegarnet-plagioclase-muscovite-quartz±ilmenite±magnetite schist. Abundant gamets 3 to 10 mm in diameter produce a knotted texture on foliation surfaces. Unit locally contains hornblende-rich layers less than 1 m thick, which produce a fascicular structure on foliation surfaces. Porphyroblasts of pyrite and pyrrhotite as much as 5 to 10 mm in diameter are present in some layers. Typically contains light-gray to tan quartzite and interlayered light- to dark-gray, laminated quartz-plagioclase granofels identical to Omqf. Unit is interbedded with Omqf on a meter scale-near mutual contact; correlates with unit Oms of Hatch and

Quartz-feldspar granofels—Light-gray- to buff-weathering, dark-gray, well-

bedded, laminated quartzite and biotite-chlorite-muscovite-plagioclasequartz granofels. Characterized by mm-scale segregations of quartz and plagioclase surrounded by muscovite folia, giving rock distinctive pinstriped texture. Lamination is tectonic and defines Taconian S2 or Acadian S₅ foliation. Contains several layers of unmapped amphibolite (Oma). Contact with Omf is an interbedded zone 20 to 50 m thick. Correlates with upper part of Om unit of Hatch and Hartshorn (1968) Omf Hornblende-quartz schist—Lustrous, light-gray to silver-gray magnetitebiotite-muscovite-garnet-chlorite-hornblende-plagioclase-quartz schist. Characterized by 1- to 2-cm-thick discontinuous quartz veins and 1- to 4-mm clots of chlorite, which may be pseudomorphous after pyroxene. Unit has a distinct, anastomosing S₂ to S₅ composite foliation. Contains numerous bodies of Omd and a single 500-m- to 1-km-thick body of ilmenite-garnet-chlorite-hornblende-muscovite-quartz-plagioclase gneiss that is identical to underlying Omfg. Contact with Omfg is a zone 5 to 25 m thick of interbeds ranging in thickness from 1 to 2 m. Unit correlates with the lower part of Om unit of Hatch and Hartshorn (1968) Feldspathic gneiss-White-weathered, light-gray, massive to well-layered biotite-garnet-hornblende-chlorite-muscovite-quartz-plagioclase gneiss. Compositional layering typically defined by graded beds or 0.5-m-thick beds rich in coarse-grained hornblende. Rare garnets 1 to 5 mm in diameter are distinctive deep red. Unit contains abundant 0.5- to 5-mthick layers of unmapped Omd. Contact with lower Omfs unit defined by a 10- to 30-m-thick interbedded zone that has individual beds 0.5 to

2 m thick. Unit terminates along the Taconian mylonitic East Dover thrust fault zone and, therefore, does not appear in Massachusetts Feldspathic schist—Rusty-weathered to lustrous, silver-gray, granulose pyrite-biotite-garnet-chlorite-quartz-muscovite-plagioclase schist and granofels containing thin, discontinuous layers of hornblende-bearing quartz-plagioclase schist. Garnets range from 2 mm to 2 cm in diameter. Contains numerous bodies of Omd. Contact with lower Omb unit is a 20- to 100-m-thick zone of intercalated beds 1 to 2 m thick of both Brookside member—Coaly-black to silvery-gray, carbonaceous, may be white-weathered, fine-grained garnet-biotite-chlorite-quartz-plagioclase-

muscovite schist and phyllite containing minor amounts of both disseminated and porphyroblastic sulfide minerals. Coaly-black phyllitic rocks are commonly interlayered with white-weathered, silvery-gray schistose rocks. Typically contains meter-thick beds of granulose schist, similar to unit Omfs and dark-gray quartzite. Small garnets 1 to 6 mm in diameter form distinctive bumps on foliation surfaces. Unit pinches out in the northeast corner of the Jacksonville quadrangle; termination appears to be an along-strike facies transition with Omfs. Omb unit is similar to and may correlate with the discontinuous Whetstone Hill Member of the Moretown Formation mapped by Doll and others (1961). Contact with lower Omfp unit is a 5- to 15-m-thick interbedded zone of 1- to 2-mthick beds of both units Omfp Pinstriped granofels—Tan- to buff-weathered, light- to dark-gray, wellbedded and laminated biotite-garnet-chlorite-muscovite-quartz-plagio-

clase granofels. Distinctive laminations (pinstripes) result from mmscale segregation of quartz and plagioclase from muscovite folia, which define either Taconian S2 or Acadian S5 foliations. Concentrations of scattered red garnets 1 to 6 mm in diameter are ubiquitous and define of light-gray to cream, laminated quartzite, which are more common at top of unit. Upper section also contains numerous bodies of unmapped Omd. Omfp and the other units of the Moretown Formation are separated from the underlying Rowe Schist by a Taconian mylonitic fault zone, the East Dover-Brookside fault zone. However, several granofel layers similar to Omfp have been mapped within the Rowe as the feldspathic biotite gneiss unit (Crfb) of the Rowe Schist proper Metadiorite—Steel-gray to dark-gray-green, coarse-grained quartz-chlo-

growths of coarse metamorphic hornblende and interstitial plagioclase impart a texture resembling a subophitic texture. Fine-grained border near contacts with host metasedimentary rocks appears to be chilled. Contacts tend to parallel Taconian S₂ foliation and compositional layering in host metasedimentary rocks. Interpreted as sills 1 to 5 m thick. Occurs in all Moretown units except Omgf and Omgs Massive amphibolite—Homogeneous dark-green to black, fine-grained biotite-chlorite-plagioclase-hornblende±epidote±garnet amphibolite. Occurs as 1- to 10-m-thick layers within Omgf, but does not appear to

flows or hypabyssal sills

rite-plagioclase-hornblende±garnet±epidote±biotite metadiorite. Inter-

have compositional layering. May have originated as discontinuous lava

Rowe Schist proper (Cambrian)—Coextensive with the Rowe Schist at

biotite-plagioclase amphibolite. Commonly contains 2- to 3-mm-thick

laminations of fine-grained quartz and epidote, but otherwise homoge-

its type locality in Massachusetts Greenstone-Very dark green to black, very finely foliated amphibolite, epidote amphibolite, and light-green to greenish-gray chlorite-plagioclase-ankerite greenstone. Commonly interlayered with gray feldspathic volcaniclastic rock and minor gray, tan, or dark-gray, laminated metasiltstone or quartzite. Dark amphibolites in unit distinguished from amphibolites in unit Crba by stratigraphic position. Interpreted as metabasalt flows and altered volcaniclastic rocks resembling MORB Dark-green amphibolite—Dark-green to black, fine-grained, well-foliated

neous. Continuous exposures as much as 100 m in thickness. Interpreted as metabasalt flows; resembles alkalic basalt as well as Large-garnet schist—Mainly lustrous, slightly rusty weathered, yellowgreen biotite-chlorite-muscovite-plagioclase-quartz schist containing large, purplish-red garnets 0.5 to 2.0 cm in diameter. Schist locally contains abundant magnetite and rods of milky-white quartz; may lack the conspicuous large garnets found elsewhere. Cross-fabric biotite and sprays of hornblende common, especially near amphibolite. Resembles rocks mapped as Stowe Formation by Doll and others (1961)

Green magnetite-chlorite schist-Pale-green to dark-green, fine-grained, tectonically laminated, lustrous magnetite-chlorite-muscovite-quartz schist and phyllite. Contains beds of dark-gray and purplish-gray chlorite-hematite phyllite having studs of white plagioclase 1 mm in diameter. Unit resembles Er? but is finer grained, more finely foliated, contains more abundant and more magnesian chlorite, and lacks the quartz rods abundant in €r?. Unit locally grades into €rgs and is commonly strongly foliated and tectonically laminated near ultramafic rock (OZd) Feldspathic quartzite—Light-yellowish-tan to gray, well-foliated, mediumgrained magnetite-muscovite-biotite quartzite and epidote quartzite. Occurs in unit Crba as zones 5 to 10 m thick and commonly associat-

Carbonaceous quartzite—Dark-gray to black, vitreous biotite quartzite and mylonitic quartz schist occurring as discontinuous layers 1 to 10 m thick. Contains knots as large as 3 cm in diameter of dark-gray aphanitic quartz resembling metachert nodules. Also contains 1- to 2-m-thick layers of carbonaceous schist similar to Ercs. Unit only occurs in the northeastern corner of the West Dover quadrangle; resembles Crchc? of Rowe(?) Schist and the Ottauquechee Formation of central Vermont (Doll and others, 1961)

Carbonaceous schist—Dark-gray to black biotite-garnet-quartz schist containing layers of carbonaceous quartzite as much as 1 m thick like Ercq. Locally, schist is graphitic and rusty weathered. Unit only occurs in the Jacksonville quadrangle

Gray feldspathic granofels and gneiss—Light-gray-weathered, gray, medium-grained biotite-quartz-plagioclase granofels and gneiss. Unit indistinctly layered but well foliated; interpreted as volcaniclastic rock Biotite-plagioclase schist and gneiss-Light-gray- to dark-gray-greenweathered, cream to light-gray, medium- to coarse-grained biotiteplagioclase-sericite-quartz schist and gneiss, which are both flecked with conspicuous 2- to 3-mm equant grains of cross-fabric biotite. Locally schistose and contains sufficient chlorite and sericite to produce a perceptible sheen on foliation surfaces. Near €rg unit contains sprays or fascicles of hornblende and (or) zones rich in garnet. Resembles €rfq, but €rfq is less schistose and darker gray Rowe(?) Schist (Cambrian)—Separated from the type locality of Rowe

Schist in Massachusetts by the Whitcomb Summit-Goose City fault zone. Rocks of the Rowe(?) Schist are traceable northward and are coextensive, in part, with the Pinney Hollow, Ottauquechee, and Stowe Formations near Ludlow. Individual units of Rowe(?) Schist and Ludlow section are not physically connected because of fault truncation and heterogeneous distribution Amphibolite and greenstone, undifferentiated—Massive dark-gray, wellfoliated, fine-grained, needled hornblende amphibolite or finely laminated epidote-quartz-chlorite-plagioclase-hornblende greenstone. Green-

stone contains beds of magnetite quartzite, chlorite schist (£r?), and

actinolite-epidote quartzite. Unit may grade into €r? or €rr?. Interpreted as metabasalt lava flows that are chemically equivalent to MORB and volcaniclastic rocks Lustrous green schist-Light-steel-gray, silvery-gray, and green-gray, lustrous magnetite-chlorite-muscovite-quartz±plagioclase±chloritoid schist and phyllite. Commonly contains rods, pods, and stringers of milkywhite quartz or ellipsoids of interlocking tiny granules of clear quartz. Locally contains small, widely scattered garnets. Contains rare beds 1 to 5 cm thick of light-pinkish-gray-weathered quartzite (coticule) containing as much as 40 percent garnet 0.2 mm in diameter. Unit resembles the Pinney Hollow Formation but contains more plagioclase and lacks widespread chloritoid, which is common in the type section at Pinney Hollow, Plymouth, Vermont

Cooper Hill Member—Dark-gray or green, dull-gray- and rusty-weathered, slabby, well-foliated, fine-grained, quartz-rich muscovite-biotite-plagioclase-quartz schist. Locally grades into chlorite-biotite-muscovite and quartz-knotted schist or phyllite containing small garnets and chloritoid(?), into amphibolite (€ra?), and into feldspathic gneiss (€rgf?). Contact with underlying amphibolite (€ra?) on Cooper Hill is sharp and marked by pods of talc-carbonate schist and chlorite-talc-magnetite-carbonate schist and serpentinite in Cooper Hill area. Two pods of serpentinized dunite (OZu) occur as inclusions within €rch?, 0.5 km and 2 km north of Rice Hill, where they are associated with coarse-grained plagioclase amphibolite (Cra?) resembling metagabbro. Unit Crch? also contains two parrow helts of carbonaceous quartzite and schist (Crchc?) Graphite schist and quartzite of the Cooper Hill Member-Dark-grayto sooty-gray-weathered, fine-grained, sulfidic graphite-biotite-muscovite-plagioclase-quartz schist containing beds of black, vitreous quartzite as much as 0.5 m in thickness. In contact with €rch? in two small outcrop belts north of Rice Hill. Unit resembles rocks described to the north in the type Ottauquechee Formation by Doll and others (1961), as well as rocks mapped as €rcq that are interbedded with €rfb in the northeast corner of the map

Biotite-quartz-plagioclase granofels-Light-gray, medium- to coarsegrained biotite-quartz-plagioclase granofels or gneiss having distinctive spots of white-weathering feldspar. Plagioclase much more abundant than quartz. Unit closely associated with contact between €ra? and €r?, where it appears to be a lateral and vertical volcaniclastic variant of the €ra? amphibolite and greenstone unit Rusty chloritic schist—Rusty-gray- to yellowish-gray-brown-weathered, lustrous, well-foliated chlorite-quartz-muscovite±plagioclase schist. Locally garnet bearing and marked by abundant knots and veins of milky-white

quartz. Unit grades into €r? and resembles €rch? from which it is distinguished by having a greater abundance of muscovite, a higher luster, and a lack of abundant biotite, which is common in Erch? Garnetiferous schist—Dark-brown- to grav-weathered, coarse-grained garnet-biotite-plagioclase-quartz schist containing coarse nubbles of large garnet- and quartz-rich veins. Occurs in northwestern corner of the map near the Hoosac Formation Ultramafic Rocks (Ordovician? to Late Proterozoic?)

Dunite of East Dover—Large body 1.5 km wide by 6 km long of dunite containing abundant relict olivine and spinel and rare primary orthopyroxene. Typically massive, although intensely foliated and altered to talc-carbonate rock and serpentinite identical to unit OZu along fault zones. Massive dunite contains numerous mm-scale veins of fibrous ser-Talc-carbonate rock and serpentinite—Five small occurrences: three in unit €ra? near Cooper Hill and two in €rch? north of Rice Hill. Orange-

tan-weathering, light-green to tan, massive serpentinized dunite altered to antigorite, magnesite, and serpentine, white-weathered magnesitecarbonate-talc schist, or steel-gray, foliated serpentine Hoosac Formation (Lower Cambrian and Late Proterozoic) Lustrous garnet schist-Lustrous, green chlorite-chloritoid-garnet-muscovite±paragonite-quartz schist. May correlate with Pinney Hollow Formation of Doll and others (1961). Unit may be allochthonous and separated from other Hoosac units by a premetamorphic thrust fault

Green albite schist-Pale-green, white albite-spotted magnetite-chloritequartz-albite schist and granofels Rusty albite schist—Rusty-weathered, black albite-biotite schist containing beds of muscovite-biotite-albite-quartz schist in which muscovite forms coarse spangles. Unit contains beds of albitic granofels similar to unit Dark-gray lustrous garnet schist-Dark-gray, finely foliated muscovitebiotite-quartz schist containing garnets as large as 2 cm in diameter. Occurs only in a thrust slice exposed near the west edge of the map near section line D-D'

Albite granofels—Gray albite-biotite-quartz granofels marked by white-

Basal lustrous schist—Yellow-tan- to dark-gray-weathering, silvery-gray to

Turkey Mountain Member-Dark-green to greenish-gray epidote-plagio-

clase-hornblende amphibolite, chlorite-epidote-plagioclase greenstone,

and interlayered epidote-rich feldspathic volcaniclastic rock. Occurs as

four discontinuous layers throughout the Hoosac Formation mapped as

€Zhtm₁, €Zhtm₂, €Zhtm₃, and €Zhtm₄, where €Zhtm₄ is the youngest.

Lower units are TiO₂-rich alkalic metabasalts having elevated chondrite-

normalized light-REE enrichment, whereas upper units, €Zhtm₃ and

weathered grains of black albite up to 3 mm in diameter. Massive to

very well bedded. Light-gray to white weathering depends upon percentage of white-weathering albite Quartz-pebble schist-Light-tan- to gray-weathering, muscovite-feldspar quartz-pebble conglomerate and feldspathic quartz schist containing distinctive pebbles of bluish quartz Feldspathic quartzite—Orange-tan- to gray-weathered, well-bedded, feldspathic muscovite quartzite and laminated feldspathic schist containing yellow-tan quartzite beds up to 0.5 m thick Quartz conglomerate—Dark-gray-weathered muscovite-biotite quartz-

pebble conglomerate or pebbly quartzite

Turkey Mountain Member or within £Zhfq

dark-gray plagioclase-magnetite-biotite-muscovite-quartz schist having a distinctive, dark, lustrous sheen Feldspar garnet schist—Mainly coarse-grained, dark-gray- to rusty-brownish-tan-weathered garnet-biotite-muscovite-plagioclase-quartz schist. Distinguished by deep-red porphyroblasts of garnet. Muscovite may be much more abundant than biotite in light-tan, lustrous, large-garnet schist. Unit is similar to unit £Zhg in Mount Snow area (Ratcliffe, 1993a), but there it occurs near base of the Hoosac Formation where it is interbedded with €Zhab Magnetite-epidote quartzite—Minor beds interbedded with amphibolite of

€Zhtm₄, are MORB-like. Interpreted as basaltic lava flows and minor volcaniclastic rocks Basement rocks of the Rayponda and Sadawga domes Cardinal Brook Intrusive Suite (Middle Proterozoic) Harriman Reservoir Granite—Light-gray to pinkish-gray, coarse-grained biotite-plagioclase-microcline megacrystic granite and mylonitic granite. Rapakivi texture locally preserved. Commonly is highly foliated and mylonitic near Paleozoic thrust faults where coarse microcline forms

porphyroclasts in augen gneiss and mylonite gneiss Intrusive rocks of the Mount Holly Complex (Middle Proterozoic) Aplite-White, fine-grained microcline-plagioclase-quartz aplite, gneiss, and migmatite. Aplite forms massive, nonlayered exposures that are strongly foliated and locally mylonitic Granite gneiss-Medium-gray- to light-gray-weathered, fine-grained to medium-grained biotite-microcline-plagioclase gneiss containing poorly

preserved megacrysts of microcline. Unit may be a highly deformed

Calc-silicate gneiss—Dark-green, coarse-grained hornblende-diopside calcsilicate gneiss consisting of light-gray-weathering scapolite-diopside

variant of Harriman Reservoir Granite; correlation uncertain Stratified rock and paragneiss of the Mount Holly Complex (Middle Proterozoic) Layered biotite gneiss-Predominantly medium to dark-gray, well-layered, medium-grained biotite-quartz-plagioclase±hornblende gneiss containing thin layers of amphibolite, dark-spotted hornblende-plagioclase gneiss, and quartz-rich biotite gneiss. Unit contains beds of quartzite, calc-silicate gneiss, and rusty sulfidic gneiss as described below, but these beds are too thin to show at map scale

gneiss; diopside-idocrase quartzite; and, rarely, light-bluish-gray, coarsegrained calcite-diopside marble Rusty quartz gneiss-Yellowish-gray- to slightly rusty weathered, finegrained muscovite-biotite-quartz-plagioclase gneiss and rusty, sulfidic quartz gneiss containing thin layers 0.5 m thick of quartzite and rustyweathered muscovite-quartz schist

EXPLANATION OF MAP SYMBOLS

Contact—Dashed where approximately located, dotted where concealed Major faults-Dashed where approximately located, dotted where concealed by water Thrust fault of Acadian orogeny of F₄ or younger generation—Teeth on

overthrust sheet Thrust fault—Teeth on overthrust sheet. Interpreted as Taconian F₂ generation. In cross section, arrows show relative movement; A, Overturned thrust fault—Teeth point in direction of dip; bar on over-

thrust sheet. Interpreted as Taconian of F₂ generation Mylonitic F₂ fabric in Taconian shear zones of F₂ generation Mylonitic F₄ fabric in Acadian shear zones Major folds—Approximate axial trace of major folds; arrow indicates

plunge direction, and rectangle indicates dip of inclined axial surface where shown. Age of formation based on crystalloblastic fabric and structural overprint relations. Relative age identified by color and subscript; the greater the subscript number, the younger the fold. Axial traces of Acadian F3, F4, and F5 folds are located by deflections in older Taconian surfaces as determined from formline maps of S₂ surface TACONIAN FOLD \circ — \circ — \circ $\mathbf{F_1}$ fold—Expressed by axial-surface S_1 schistosity; axial surface highly

refolded and dip irregular F₂ fold—Expressed by a second-generation S₂ foliation, intense mylonitization near F2 thrust faults, and nearly complete transposition of S1 schistosity on fold limbs. Folds are overturned, reclined, and sheath like; where shown, arrow indicates plunge; rectangle indicates dip direction of axial surface

ACADIAN FOLDS F_3 fold—Expressed by S_3 crenulation cleavage or weak axial-surface foliation overprinted on well-developed S2 foliation. Folds are broad and open, upright, or overturned

 F_3 F₃ antiform F₃ inclined synform—Rectangle shows dip direction of axial surface F₃ inclined antiform—Rectangle shows dip direction of axial surface F₄ fold—Expressed by weak to strong crenulation cleavage to the north and west and by a moderately well-developed axial-surface foliation to

 F_4 upright synform F_4 upright antiform F₄ inclined synform—Rectangle shows direction of dip of axial surface F₄ inclined antiform—Rectangle shows direction of dip of axial surface F₅ fold—Expressed by weak S₅ crenulation cleavage and upright axial surface. Folds are broad and open, especially to the north and west, and tighter to the east; overprinted on S4 and older surfaces

the east and southeast; overprinted on S₃ and older surfaces

PLANAR FEATURES (May be combined; joined at point of observation, or superimposed where strike of two features identical)

 F_5 F₅ antiform

Strike and dip of Middle Proterozoic gneissosity—Confined to rocks in core of Sadawga and Rayponda domes

Strike and dip of bedding Inclined—Right side up, tops determined from primary sedimentary

Strike and dip of Taconian S₁ schistosity or possibly S₂ schistosity Strike and dip of highly plicated schistosity, commonly Taconic Strike and dip of parallel Taconian S₁ foliation and bedding

Strike and dip of Taconian S₂ foliation or of Taconian mylonitic foliation in Proterozoic rocks—Expressed by vertically stacked isocli- $\operatorname{nal}\ F_2$ folds in S_1 or Middle Proterozoic gneissosity. Well-developed axial-plane foliation and strong downdip lineation. Fabric parallels thrust faults of F₂ generation

Strike and dip of Acadian S₃ crenulation cleavage Vertical Strike and dip of Acadian S4 crenulation cleavage

Strike and dip of Acadian S_{4.5} crenulation cleavage—Prevalent on eastern flank of Sadawga Lake F4 antiform, where it overprints S4 cleavage, and east of the South Newfane thrust, where it overprints Acadian S₁ schistosity Strike and dip of Acadian So/S1 bedding-parallel foliation east of the South Newfane thrust—May be combined with S_{4.5} crenulation

South Newfane thrust, this symbol represents the Acadian schistosity cleavage superimposed on Taconian S2 schistosity Strike and dip of Acadian S₅ crenulation cleavage Inclined Strike and dip of inclined brittle fault (Acadian or younger)—Arrow shows bearing and plunge of slickensides; half arrows show direction of

cleavage symbol where strikes coincide but dips differ. West of the

Strike and dip of quartz vein (Acadian or younger) rical Vertical MINOR FOLDS

Strike and dip of axial surface of minor fold—Arrow shows direction and amount of plunge of hinge line where shown; horizontal hinge line shown by double arrow

Taconian folds F_1 inclined F₂ inclined—Spatially and temporally associated with thrust fault and zone of mylonitization; hinge line commonly plunges downdip

 F_3 inclined F₄ vertical $F_{4,5}$ vertical

 F_5 vertical Strike and dip of prominent joint ⁷⁰ i Inclined ⊨j Vertical **COMBINED PLANAR SYMBOLS**

 F_5 inclined

(Joined at point of observation or superimposed where strikes are identical; any combination possible) Strike and dip of inclined S₂ foliation, intersecting S₃ crenulation cleavage, and S₄ crenulation cleavage Inclined S_1 schistosity and overprinted S_3 crenulation cleavage

LINEAR FEATURES (May be combined with planar features) Bearing and plunge of hinge line of Taconian F₁ fold

Plunging Bearing and plunge of hinge line of Taconian F2 fold—Expressed as

Plunging Horizontal Bearing and plunge of hinge line of Acadian F_3 , F_4 , $F_{4.5}$ fold— Generation identified by combination with proper F₃, F₄, or F_{4.5} axialsurface symbol

tight folds of mylonitic fabric in Middle Proterozoic rocks or as S₁

schistosity in pre-Silurian rocks. Hinge lines commonly plunge downdip

of S₂ surface forming reclined and (or) sheath folds; rotation sense

shown by small arcs as either clockwise or counter-clockwise as viewed

Bearing and plunge of hinge line of Acadian F₅ fold shown in combination with F₅ axial-surface symbol Bearing and plunge of mineral lineation—Commonly parallels intersection of crenulation cleavage and older foliation. hb, hornblende; q, quartz rod, commonly an extension feature; plg, plagioclase

Bearing and plunge of quartz rod—Commonly an extension lineation →²³ Bearing and plunge of slickensides on brittle fault—Combined with brittle fault symbol o^{J37-2} Sample locality of chemical analysis described in text, tables, and

• hb Location of hornblende sample used for 40Ar/39Ar dating

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• hb Location of hb Locati □ M-1 Sample locality of metamorphic assemblage used for microprobe analysis and thermobarometric data in tables 7 and 8

XNi Inactive quarry or prospect—Ni, nickel Active quarry for road metal, stone Bedrock outcrop or area containing abundant outcrops

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Geology mapped in 1989, 1990, and 1991

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