

Base layers derived from U.S. Geological Survey (USGS) 7.5-minute Series (Topographic)  
 Catoctin Furnace Quadrangle 1955 (photorevised 1983)  
 Digital line graphs for hydrography, topography, transportation and boundaries (1:24,000)  
 Topography by photogrammetric methods from aerial photographs taken 1943. Field checked 1944.  
 Culture revised by USGS 1955. Map edited in 1983 by USGS based on aerial photographs taken 1981  
 and other sources; this information not field checked.

Cultural features shown from USGS Geographic Names Information System database  
 (To determine current magnetic declination see: <http://www.ngdc.noaa.gov/cgi-bin/geom/ldatm.pl>)

Current map projection:  
 Maryland State Plane Coordinate System 1987  
 (Projection: Lambert Conformal Conic, 1980 geodetic reference system)  
 (Horizontal Datum: North American Datum 1983)

MD State Plane 2000-meter grid ties and coordinates shown in black  
 Geographic coordinates (latitude-longitude) shown near corners and 2.5' intervals (in black)

**Description of Map Units**

- |   |   |
|---|---|
| <p><b>Quaternary</b></p> <ul style="list-style-type: none"> <li><b>Qal</b> Alluvium<br/>Brownish red, poorly sorted, rounded pebbles to boulders with sand, silt, and clay matrix. Layers of moderately sorted, rounded cobbles or sandstone pebbles are also present locally. Thickness is less than 15 feet (5 m).</li> <li><b>Qc</b> Colluvium<br/>Unsorted, light gray to reddish gray, angular to subangular boulders and cobbles of quartzite with a silty matrix. Present as thick aprons at the base of the eastern flank of Catoctin Mountain. Originated by the streams flowing from the Blue Ridge and by down-slope movement of weathered material from the Weverton Formation. Thickness ranges from a thin veneer to more than 100 feet (30 m).</li> <li><b>Qt</b> Terrace deposits<br/>Reddish brown, sandy and clayey mixture of unconsolidated pebbles to cobbles of sandstone, vein quartz, and quartzite. Present above the current Monocacy River. Thickness ranges from a thin veneer to more than 10 feet (3 m).</li> </ul> <p><b>Triassic</b></p> <ul style="list-style-type: none"> <li><b>Tg</b> Gettysburg Formation<br/>Medium red to reddish gray, silty, mudstone to claystone with thin interbeds of medium- to coarse-grained sandstone. Sandstone exhibit sharp bases, shale pebble lag conglomerates, and fine up-section. Claystone intervals are thoroughly root-mottled and contain light gray, calcite carbonated nodules. Along the base of Catoctin Mountain a mappable limestone conglomerate (1957) marks the western edge of the Gettysburg Basin in Maryland and is similar in appearance and position to the Leeburg Formation in the Culpeper Basin. Thickness is in question, but may be as much as 8,000 feet (2,438 m).</li> <li><b>Tn</b> New Oxford Formation<br/>Brownish red to reddish brown, medium- to coarse-grained sandstone interbedded with red, variegated claystone and micaceous siltstone. Conglomerate at the base of formation (40%) is light reddish gray, subangular to subrounded, quartz and limestone conglomerate. Clasts are predominantly gray limestone, tan dolomite, or quartz pebbles with a matrix is a reddish brown, calcareous mudstone. Sandstones (Tn1) exhibit sharp bases with shale pebble lag conglomerates, and fine up-section. Claystone intervals are thoroughly root-mottled and contain light gray, calcite carbonated nodules. Poorly exposed, and thickness is in question. Thickness is in excess of 10,000 feet (3,048 m) (Brezinski, 2004).</li> </ul> <p><b>Cambrian</b></p> <ul style="list-style-type: none"> <li><b>Ca</b> Frederick Formation<br/>Dark gray, very thin to medium-bedded limestone, dolomitic limestone with thin intervals of shale, sandy limestone and breccia. Because of the numerous lithologies present in this unit, it is herein recommended that the term formation be used when discussing the Frederick. Four members are recognized within the Frederick Formation by Reinhardt (1974) and Brezinski (2004), but only the Adamstown Member and the Rocky Springs Station Member occur in the Catoctin Furnace Quadrangle.</li> <li><b>Ca1</b> Adamstown Member<br/>Thinly interbedded, medium dark gray to dark gray, argillaceous, fine-grained limestone and dusky yellow to medium dark gray, silty dolomite. Limestone beds range from 0.1 to 2.0 inches (0.5 to 5.1 cm) in thickness. Several thin (6.0 to 30 feet or 1.8 to 9.1 m), dark greenish gray to greenish black, light olive brown weathering, silty, calcareous shale intervals are present throughout the member. The top of the member is mapped at the base of the lowest medium to thick bed of sandy or silty limestone. Thickness is approximated at 1,000 feet (305 m).</li> <li><b>Ca2</b> Rocky Springs Station Member<br/>Interbedded, dark gray, thin-bedded, lime mudstone, dark gray shale, medium gray, tan weathering dolomite, and medium gray, polymictic breccias (Ca2b). The Rocky Springs Station outcrop belt in the Catoctin Furnace Quadrangle is largely restricted to the Lewistown inflex, along the base of Catoctin Mountain. Thickness is approximated at 1,200 feet (366 m).</li> </ul> | <p><b>Lower Cambrian</b></p> <ul style="list-style-type: none"> <li><b>Ca3</b> Harpers Formation<br/>Brownish gray to dark greenish gray, silty, phyllitic shale to highly sheared, phyllitic siltstone with intervals of brownish gray, medium-grained, silty sandstone. Thickness is estimated at greater than 900 feet (275 m).</li> </ul> <p><b>Lower Cambrian</b></p> <ul style="list-style-type: none"> <li><b>Ca4</b> Weverton Formation<br/>Predominantly light gray to gray quartzite, conglomerate, and graywacke. Three members make up the Weverton Formation on Catoctin Mountain. These are, in ascending order: the Buzzard Knob, Maryland Heights, and Owens Creek members (Brezinski, 1992).</li> <li><b>Ca5</b> Owens Creek Member<br/>Predominantly light gray to gray medium quartzite, conglomeratic graywacke. Thickness is 200 feet (61 m).</li> <li><b>Ca6</b> Maryland Heights Member<br/>Interbedded, dark greenish gray, phyllitic, highly claved, metaquartzite and metasliltstone. A massive, light gray quartzite near top of member (Ca6a) is the main ridge former on Catoctin Mountain and forms Bobb Hill and Car Rock in the Catoctin Furnace Quadrangle. This unit rarely exceeds 50 feet (15 m). Thickness of the member is estimated at 200 to 300 feet (61 to 91 m).</li> <li><b>Ca7</b> Buzzard Knob Member<br/>Light to medium gray, medium-bedded, cross-bedded quartzite with dark gray, argillaceous layers and granular conglomerate layers up to 1.5 inch (3.8 cm) thick. The Buzzard Knob Member has an estimated thickness of 150 to 200 feet (46 to 61 m).</li> <li><b>Ca8</b> Loudoun Formation<br/>Medium to dark gray, medium-bedded, sandy, quartz phyllite, conglomeratic phyllite, and medium to dark gray, granular, phyllitic conglomerate. The Loudoun Formation ranges in thickness from 75 to 200 feet (23 to 61 m).</li> </ul> <p><b>Late Proterozoic</b></p> <ul style="list-style-type: none"> <li><b>Zm</b> Catoctin Formation<br/>Medium to dark greenish-gray, chloritic, locally amygdaloidal, epidote-rich metasliltstone. Some areas are composed of highly sheared chloritic siltstone. Epidote occurs as light-green veins and nodules. Thickness is estimated at greater than 1000 feet (305 m).</li> </ul> |
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**References**

Brezinski, D. K., 1992, Lithostratigraphy of the western Blue Ridge cover rocks in Maryland: Maryland Geological Survey, Report of Investigations 55, 69 p.

Brezinski, D. K., 2004, Stratigraphy of the Frederick Valley and its relationship to karst development: Maryland Geological Survey, Report of Investigations 75, 101 p.

Reinhardt, J., 1974, Stratigraphy, Sedimentology and Cambro-Ondovician Paleogeography of the Frederick Valley, Maryland: Maryland Geological Survey, Report of Investigations 23, 73 p.

**Supplemental Information**

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Geologic field mapping was completed in 2003-2004. The geologic map was compiled in digital form by Heather Quinn of the Maryland Geological Survey and by Brent Anderson and Catherine Luckhart of Towson University, Center for Geographic Information Sciences.

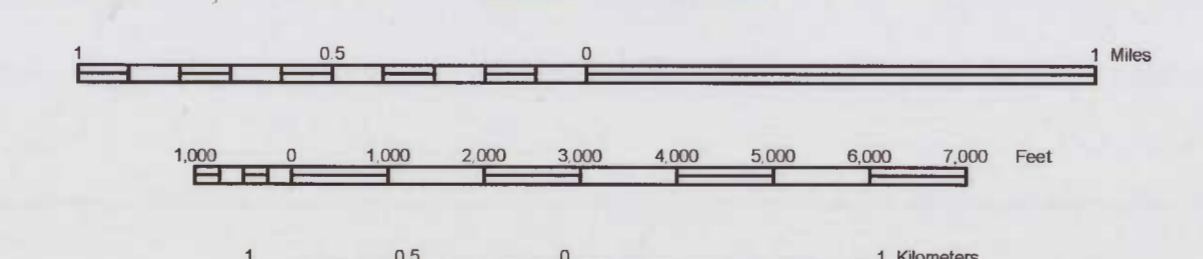
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 Released June 2004

**Geologic Map of the Catoctin Furnace Quadrangle, Frederick County, Maryland**

By  
**David K. Brezinski**  
 2004

Scale 1:24,000

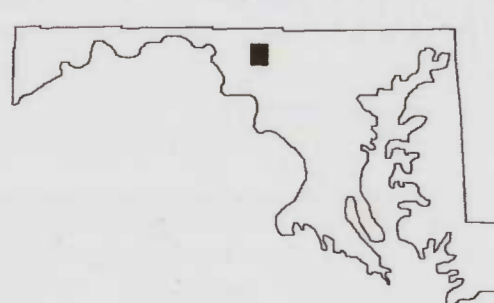


Contour Interval 20 Feet  
 National Geodetic Vertical Datum of 1929  
 (To convert elevations to the North American Vertical Datum of 1988, subtract 1 foot)  
 (To convert from feet to meters, multiply by 0.3048)

Adjacent 7.5' Quadrangle Names  
 Catoctin Furnace Quadrangle, shaded

1	2	3
4	5	6
7	8	

1. Simsbury  
 2. Blue Ridge Summit  
 3. Emmitsburg  
 4. Myersville  
 5. Woodstock  
 6. Middlebrook  
 7. Frederick  
 8. Walkersville



**Explanation of Map Symbols**

- Geologic Symbols**
- Contacts**  
 Geologic contact, approximately located dotted where concealed
- Faults**  
 U Uphrown side  
 D Downthrown side  
 Fault, concealed  
 Fault, inferred  
 Folds  
 Minor syncline bearing and degree of plunge shown  
 Minor anticline bearing and degree of plunge shown
- Planar Features**  
 For a single measurement, the point of observation is at the midpoint of the symbol. For multiple measurements (dip-slip symbols), the point of observation is at the tail-end junction point common to all symbols.  
 Inclined bedding strike and degree of dip shown  
 Inclined cleavage strike and degree of dip shown  
 Vertical cleavage strike shown
- Base Map Symbols**
- Transportation**  
 Primary route, class 1 (divided, lanes separated)  
 Primary route, class 1 (undivided)  
 Secondary route, class 2  
 Light duty road or street, class 3  
 Unimproved road or street, class 4  
 Trail  
 Railroad, railroad siding or spur  
 Power transmission line  
 Substation
- Topography**  
 Topographic index contour (100-ft interval)  
 Topographic intermediate contour (20-ft interval)
- Hydrography**  
 Stream  
 Water body (eg. lakes, ponds, rivers)
- Culture**  
 Boundary, Incorporated, Village, Town, or Borough  
 Miscellaneous Park, Reservation, or Monument  
 Small Park  
 State Park  
 Airport  
 Cemetery  
 Church  
 School

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 Governor



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 Secretary  
 W. P. Jensen  
 Deputy Secretary  
 MARYLAND GEOLOGICAL SURVEY  
 Emery T. Cleaves  
 Director

Copies of this map are available in hard copy (paper) and digital form from:  
 MARYLAND GEOLOGICAL SURVEY  
 2300 Saint Paul Street  
 Baltimore, MD 21218  
 Ph: 410-554-5500  
 Fax: 410-554-5502  
<http://www.mgs.md.gov/>

