Catoctin Furnace Quadrangle, Karst Features Map

Description of Map Units

Quaternary

Alluvium
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).

Colluvium
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).

Terrace deposits
Reddish brown, sandy and clayey mixture of unconsolidated pebbles to cobbles of sandstone, vein quartz, and quartzite. Present above the current Monacacy River. Thickness ranges from a thin veneer to more than 10 feet (3 m).

GETTYSBURG BASIN

Triassic

Gettysburg Formation
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, caliche carbonated nodules. Along the base of Catoctin Mountain a mappable limestone conglomerate (Trgc) marks the western edge of the Gettysburg Basin in Maryland and is similar in appearance and position to the Leesburg Formation in the Culpeper Basin. Thickness is in question, but may be as much as 8,000 feet (2,438 m).

New Oxford Formation
Brownish red to reddish brown, medium- to coarse-grained sandstone interbedded with red, variegated claystone and micaceous siltstone. Conglomerate at the base of formation (Trnc) is light reddish gray, subangular to subrounded, quartz and limestone conglomerate. Clasts are predominately gray limestone, tan dolostone, or quartz pebbles with a matrix is a reddish brown, calcareous mudstone. Sandstones (Trns) exhibit sharp bases with shale pebble lag conglomerates, and fine up-section. Claystone intervals are thoroughly root-mottled and contain light gray, caliche carbonate nodules. Poorly exposed, and thickness is in question. Thickness is in excess of 10,000 feet (3,048 m) (Brezinski, 2004a, b).

Cambrian

Frederick Formation
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 (2004a, b), but only the Adamstown Member and the Rocky Springs Station Member occur in the Catoctin Furnace Quadrangle.

Adamstown Member
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 (0.3 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 algal limestone. Thickness is approximated at 1,000 feet (305 m).

Rocky Springs Station Member
Interbedded, dark gray, thin-bedded, lime mudstone, dark gray shale, medium gray, tan weathering dolomite, and medium gray, polymictic breccias (Cfrb). The Rocky Springs Station outcrop belt in the Catoctin Furnace Quadrangle is largely restricted to the Lewistown inlier, along the base of Catoctin Mountain. Thickness is approximated at 1,200 feet (366 m).

Cambrian

Harpers Formation
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).

Weverton Formation
Predominately 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).

Owens Creek Member
Predominately light gray to gray medium quartzite, conglomeratic graywacke. Thickness is 200 feet (61 m).

Maryland Heights Member
Interbedded, dark greenish gray, phyllitic, highly cleaved, metaquartzite and metasiltstone. A massive, light gray quartzite near top of member (Cwmq) is the main ridge former on Catoctin Mountain and forms Bobs Hill and Cat Rock in the Catoctin Furnace Quadrangle. This subunit rarely exceeds 50 feet (15 m). Thickness of the member is estimated at 200 to 300 feet (61 to 91 m).

Buzzard Knob Member
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).

Late Proterozoic-Lower Cambrian?

Loudoun Formation
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).

Late Proterozoic

Catoctin Formation
Metabasalt
Medium to dark greenish-gray, chloritic, locally amygdaloidal, epidote-rich metabasalt. Some areas are composed of highly sheared chlorite schist. Epidote occurs as light-green veins and nodules. Thickness is estimated at greater than 1000 feet (305 m).

References

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

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

_____, 2004b, Geologic Map of the Catoctin Furnace Quadrangle, Frederick County, Maryland: Maryland Geological Survey, Quadrangle Geologic Map. scale 1:24000 (CATOCGEO2004.1).

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

Supplemental Information

Use Constraints: These data represent the results of data collection/processing for a specific Department of Natural Resources, Maryland Geological Survey activity and indicate general existing conditions. As such, they are only valid for the intended use, content, time, and accuracy specifications. The user is responsible for the results of any application of the data for other than their intended purpose. The Maryland Geological Survey makes no warranty, expressed or implied, as to the use or appropriateness of the licensed data, and there are no warranties of merchantability or fitness for a particular purpose of use. The Maryland Geological Survey makes no representation to the accuracy or completeness of the data and may not be held liable for human error or defect. Data are only valid at1:24,000 scale. Data should not be used at a scale greater than that.

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Version: CATOCKST2004.1
Released June 2004

Base layers derived from U.S. Geological Survey (USGS)
7.5-minute Series (Topographic)
Catoctin Furnace Quadrangle 1953 (photorevised 1985)
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 1953. Map edited in 1985 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/seg/gmag/fldsnth1.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 tics and coordinates shown in black
Geographic coordinates (latitude-longitude) shown near corners and 2.5' intervals (in black)

GN
(State Plane Grid North)

Karst Features Map of the Catoctin Furnace Quadrangle, Frederick County, Maryland

By
David K. Brezinski
2004

Adjoining 7.5' Quadrangle Names
Catoctin Furnace Quadrangle, shaded

1	2	3	1. Smithsburg 2. Blue Ridge Summit 3. Emmitsburg 4. Myersville 5. Woodsboro 6. Middletown 7. Frederick 8. Walkersville
4		5	
6	7	8	

Scale 1:24,000

1 0.5 0 1 Miles
1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet
1 0.5 0 1 Kilometers

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)

Explanation of Map Symbols

Geologic Symbols

Contacts
- Geologic contact; approximately located dotted where concealed

Karst Features
- Active Sinkhole
- Depression
- Spring

Faults
- U Upthrown side
- D Downthrown side
- Fault; concealed
- Fault; inferred

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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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/