VIRGINIA MINERALS

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF MINES, MINERALS AND ENERGY
Richmond, Virginia

Published quarterly by the DIVISION OF MINERAL RESOURCES
900 Natural Resources Drive, Charlottesville, VA 22903

VOL. 47 MAY 2001 NO. 2

Reference Section of the Cambrian-age Rome Formation to Ordovician-age Mascot Dolomite measured near Gate City, Virginia

William W. Whitlock

A reference section, extending from the Middle Cambrian Rome Formation into the Lower Ordovician Mascot Dolomite, was measured in Scott County, Virginia. This is one of the most complete measured sections in Scott County and the surrounding area. The continuity and nearly complete exposure allows for examination of stratigraphic relationships between adjacent geologic formations and individual rock units. Sedimentary features such as cyclic bedded limestones, "algal-head" structures, thrombolitic dolomites, and possible paleokarst collapse features are present.

Construction of State Highway 72 (formerly State Road 660) in Scott County, Virginia northeast of Gate City exposed a nearly continuous section of Cambrian to Ordovician age rocks. During the Fall of 1993, the author measured the stratigraphic section while mapping the geology of the Gate City and Kingsport 7.5-minute quadrangles. The section is comprised of 3991 feet of limestone, dolostone, shale, sandstone, and siltstone. The rocks are divisible into the following formations (in ascending order): Cambrian-age Rome Formation, Rutledge Formation, Rogersville Shale, Maryville Limestone, Nolichucky and Maynardville Formations, and Copper Ridge Dolomite, and the Ordovician-age Chepultepec, Kingsport, and Mascot Dolomites. The section begins south of Copper Creek along the north side of State Highway 72 and extends south along State Highway 72 to approximately 1800 feet north of State Highway 71 (Figure 1).

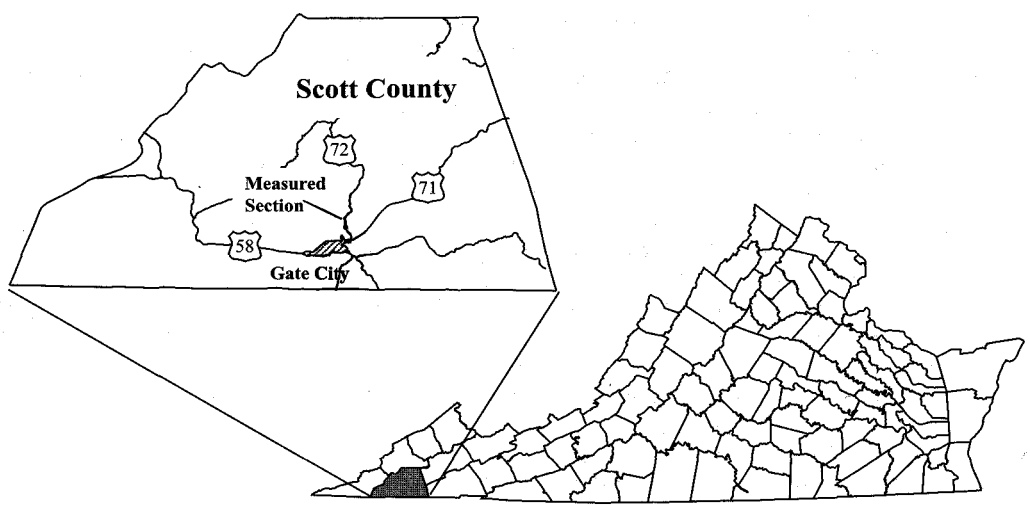

Figure 1. Index Map of Measured Section Location

Following is the description of individual rock units within each formation.

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
	Top of Reference Section		
	Mascot Dolomite* (362+ feet) *Incomplete Section.		
179	Dolostone, medium-light-gray (N6), weathers light-gray (N7), very fine-grained, thick-bedded, with sparse white (N9) dolomite blebs	5.0	3991.0
178	Covered	15.0	3986.0
177	Dolostone, medium-light-gray (N6) to light-gray (N7), weathers medium-gray (N5) to light-gray (N7), very fine-grained to fine-grained, very thick-bedded.	40.0	3971.0
176	Mostly covered, with widely separated, isolated outcrops. Float of dolostone, light-gray (N7), weathers very light-gray (N8),very fine-grained.	25.0	3931.0
175	Dolostone, very pale-yellowish-brown (10YR7/2), weathers very light-gray (N8), very fine-grained, very thick-bedded, with thin (1-4") distinct layers with medium-grained quartz grains floating in the dolostone.	7.0	3906.0
174	Dolostone, medium-gray (N5), weathers medium-gray (N5), very fine-grained, very thick-bedded, well-indurated, gradational lower contact. Some zones of the dolostone contain very light-gray (N8) dolostone blebs.	26.5	3899.0
173	Dolostone, medium-light-gray (N6) to very light-gray (N8), weathers light-gray (N7), micrograined to very fine-grained, very thick-bedded (3'+) to thick-bedded (1'+), with lesser medium beds (~6"), well-indurated. Sparse medium-light-gray (N6), thin (0.5") chalcedonic chert layers and sparse very light-gray (N8), chalcedonic chert masses (~6") throughout unit. Thin (0.5-1"), medium-dark-gray (N4), shaly dolostone at 166 feet above base of unit. Small (1-2" thick x 2-4" long) chert nodules at 168 feet above base.	208.5	3872.5
172	Zone of unoriented dolostone and chert fragments (6-12" diameter) in irregularly bedded shale: Shale, dolomitic, pale-greenish-gray (5GY7/1). Dolostone, medium-gray (N5), weathers light-gray (N7), very fine-grained. Dolostone, light-gray (N7), weathers light-gray (N7), very fine-grained. Chert, medium-dark-gray (N4), chalcedonic.	6.0	3664.0
171	Dolostone, medium-light-gray (N6), weathers medium-light-gray (N6), very fine-grained, medium (~8")- to thick (~2') bedded, with 2" thick shale zone at 18 feet above base of unit. Shale, greenish-gray (5GY6/1), weathers greenish-gray (5GY6/1), irregularly laminated, hard, brittle. Sparse, light-gray (N8) to white (N9), dolostone stringers.	29.0	3658.0
	Kingsport Dolomite (234.5 feet).		
170	Breccia zone of angular, unoriented dolostone fragments surrounded by dolostone matrix. Dolostone, white (N9), coarse-grained. Dolostone fragments, light-gray (N7), very fine- to fine-grained.	9.0	3629.0
169	Mostly covered.	9.0	3620.0
168	Dolostone, light-gray (N7) to very light gray (N8), very thick-bedded (5'+), well-indurated, with abundant chert throughout formation. Chert ranges from white (N9) to light-gray (N7) to dark-gray (N3), chalcedonic, irregular masses. In some zones the white chert occurs as disseminated blebs throughout. There are zones of angular, white to medium-gray, layered, chalcedonic chert fragments in dolostone. Approximately 36 feet above base of this unit angular chert fragments as much as 2 feet by 6 inches are in a dolostone matrix. *(Probably is a paleokarst collapsed breccia zone).*	131.5	3611.0
167	Chert, white (N9), chalcedonic. Lower 1.5' entirely chert, upper 2.5' mixture of chert and light gray, fine-grained dolostone.	4.0	3479.5
166	Dolostone, light-gray (N7), weathers light-gray (N7), micrograined, very thick-bedded (5'+).	11.5	3475.5
165	Dolostone, same as unit 159, with layers of medium- to coarse-grained dolostone, sparse zones of pinkish-gray (5YR8/1) to white (N9), fine- to coarse-grained dolostone blebs and stringers, and sporadic, irregular layers of very light gray (N8), chalcedonic chert.	26.5	3464.0
164	Dolostone, same as unit 158.	4.5	3437.5
163	Dolostone, same as unit 159.	5.5	3433.0
162	Dolostone, same as unit 158, with irregular lenses of very light-gray (N8), chalcedonic chert.	4.5	3427.5
161	Dolostone, same as unit 159.	16.0	3423.0
160	Dolostone, same as unit 158.	2.0	3407.0
159	Dolostone, very light-gray (N8), weathers very light-gray (N8) to light-gray (N7), fine-grained to very fine-grained, very thick-bedded (3'+) with lesser thick-bedded (1.5-3'), well-indurated dolostone, and local zones of pinkish-gray (5YR8/1) dolostone.	10.5	3405.0

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
	Chepultepec Dolomite (826.0 feet).		
158	Dolostone, light-gray (N7) to pinkish-gray (5YR8/1), very fine-grained to micrograined, thick-bedded, well-indurated, gradational upper contact, sharp lower contact.	4.5	3394.5
157	Dolostone, light-gray (N7) to very light-gray (N8), very fine-grained, medium (<1')- to thick-bedded (1.5'), well-indurated, sharp upper and lower contacts.	8.0	3390.0
156	Dolostone, mottled pale-red (5R6/2) and pinkish-gray (5YR8/1), with lesser amounts of very pale-red (5R7/2) and very light-gray (N8), micrograined to very fine-grained, very thick-bedded (3'+) to medium-bedded (6-8"), very well-indurated. Distinctive light-olive-gray (5Y6/1), thinly laminated (<0.5") shale in sporadic, laterally continuous layers, 2-6 inches apart vertically.	17.3	3382.0
155	Dolostone, light-gray (N7), weathers light-gray (N7), very fine-grained, well-indurated, with white (N9), coarse-grained, dolostone blebs. Irregular masses of light-gray (N7), chalcedonic chert are at base of unit. Sharp upper and lower contacts.	2.7	3364.7
154	Dolostone, very light-gray (N8) with distinctive pale-red (5R6/2) mottling, medium (6")- to thick-bedded (2') in lower part. Dolostone in upper part is very pale-red (5R7/2), weathers very pale-red (5R7/2) to pinkish-gray (5YR8/1). Moderate to abundant chert layers and nodules from 7-10 feet above base of unit. Chert, medium-light-gray (N6) to medium-dark-gray (N4). Sharp upper contact, gradational lower contact.	14.0	3362.0
153	Dolostone, very light-gray (N8) to medium-light-gray (N6), weathers very light-gray (N8) to light-gray (N7), very fine-grained, medium-bedded (6") to very thick-bedded (4'+). Sparse chert, white (N9) to light-gray (N7), irregular masses and chert, grayish-black (N2), lenses and stringers, scattered throughout dolostone. A 1-foot-thick zone of disturbed white to medium-gray chert fragments in dolostone is 68 feet above base of unit. A 0.5" thick, light-olive-gray (5Y6/1) to greenish-gray (5GY6/1), laminated shale is 40 feet above base of unit. Unit is partially covered from 74-94 feet above base of unit.	109.0	3348.0
152	Dolostone, very pale-yellowish-brown (10YR7/2) to light-gray (N7), weathers light-gray (N7) to medium-light-gray (N6), medium3") to thick-bedded (2'+), well-indurated. Sparse chert, dark-gray (N3), chalcedonic, elongate nodules, in 1 to 2 layers.	35.0	3239.0
151	Dolostone, brownish-gray (5YR4/1), weathers brownish-gray (5YR4/1) to light-brownish-gray (5YR6/1), very fine-grained, medium (0.5') to thick-bedded (1.5'), well-indurated. Sharp upper contact, lower contact covered.	2.0	3204.0
150	Covered.	4.0	3202.0
149	Dolostone, medium-light-gray (N6) to light-brownish-gray (5YR6/1), weathers light-gray (N7) to very light-gray (N8), micrograined to very fine-grained, medium (0.5')- to thick-bedded (1.5'), well-indurated. Sparse medium-gray (N5) chert nodules.	11.0	3198.0
148	Dolostone, medium-light-gray (N6), weathers, medium-light-gray (N6) to light-gray (N7), medium (0.3')- to thick-bedded (2-3'), well-indurated. Darker dolostone zone 6-8 feet above base. White (N9) quartz crystal clusters in lower 3 feet of unit. Shale sandy, medium-gray (N5), weathers olive-gray (5Y4/1), laminated to very thin-bedded, 0.2 feet thick, 27 feet above base of unit. Sparse medium gray chert nodules. Sections of this unit are partially covered but fairly continuous section.	54.0	3187.0
147	Dolostone, medium-dark-gray (N4), weathers medium-dark-gray (N4), thin-bedded (1-4"), well-indurated, thin, silty laminations throughout.	1.0	3133.0
146	Dolostone, very light-gray (N8), weathers, very light-gray (N8), very fine-grained to micrograined, thin (2-3')- to thick-bedded (1'+), with irregular lenses, layers, blebs of dolostone, very light-gray (N8) to white (N9).	19.0	3132.0
145	Dolostone, brownish-gray (5YR4/1), weathers light-brownish-gray (5YR6/1), very fine-grained to fine-grained, well-indurated, medium-bedded (0.5') in lower part to thick-bedded (3') to very thick-bedded (3'+) in middle and upper part. Dolostone, very light-gray (N8) to white (N9), blebs, sparse to locally abundant. Chert, very light-gray (N8), blebs and irregular nodules.	22.0	3113.0
144	Dolostone, medium-dark-gray (N4), weathers medium-dark-gray (N4), very fine-grained, thick-bedded (1.5'), lower contact covered.	5.0	3091.0
143	Mostly covered with isolated small outcrops of dolostone. Dolostone, very pale-yellowish-brown (10YR7/2), weathers very pale-yellowish-brown (10YR7/2), very fine-grained and clotted dolostone, very pale-yellowish-brown (10YR7/2) to dark-yellowish-brown (10YR4/2), with stringers and irregular masses of dolostone, very light-gray (N8) to white (N9), very fine-grained.	25.0	3086.0
142	Dolostone, pale-yellowish-brown (10YR6/2) and medium-gray (N5), weathers pale-yellowish-brown (10YR6/2) to medium-gray (N5) to medium-light-gray (N6), very fine-grained, medium (6"-1') to thick-bedded (1.5'), well-indurated with dusky-yellowish-green (5GY5/2), laminated shale partings, 12-16 feet above base of unit. Sparse medium-gray (N5), chalcedonic chert nodules in upper 10 feet of unit.	43.0	3061.0

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
141	Covered, includes isolated, small outcrops and float of medium-grained dolostone similar to unit 138, except no chert or silty zones.	19.0	3018.0
140	Dolostone, medium-gray (N5), weathers medium-gray (N5) to very light-gray (N8), very fine-grained, medium (0.5')- thick-bedded (1.0'), well-indurated, with sparse medium-dark-gray (N4), chalcedonic chert. Silty laminated zone (0.5-1' thick) in middle of unit.	13.0	2999.0
139	Covered.	13.0	2986.0
138	Dolostone, medium-gray (N5), weathers medium-gray (N5), very fine-grained, thick-bedded (1-3'), with sparse white (N9), coarse-grained, dolostone splotches, and chert lenses and nodules. Chert, white (N9) to dark-gray (N3), chalcedonic nodules and irregular nodules. Top covered.	11.5	2973.0
137	Interbedded sandstone and dolostone. Sandstone, very lightgray (N8), weathers very light-gray (N8), fine- to medium-grained. Dolostone, very pal-yellowish-brown (10YR7/2), weathers very pale-yellowish-brown (10YR7/2), very fine-grained. A 1-2" thick zone of interlaminated sandstone and siltstone, dark-yellowish-brown (10YR4/2), weathers dark-yellowish-brown (10YR4/2) to pale-yellowish-brown (10YR6/2), fine-grained, medium-bedded.	1.5	2961.5
136	Dolostone, interbedded layers (1-6' thick) of medium-light-gray (N6), weathers medium-light-gray (N6) and very pale-yellowish-brown (10YR7/2), weathers very pale-yellowish-brown (10YR7/2). A prominent white (N9), 6-inch thick oolitic chert zone with contorted dolostone laminations is 11 feet above base of unit.	21.0	2960.0
135	Dolostone, light-gray (N7), weathers light-gray (N7), very fine-grained to micrograined, medium-bedded (8") to very thick-bedded. An approximate 3 foot-thick zone of "clotted" dolostone, light-gray (N7) to white (N9) splotches and stringers is about 9- to 12-feet above base of unit.	28.0	2939.0
134	Dolostone, medium-gray (N5), weathers medium-gray (N5), very fine-grained, thick-bedded, with zones of light-gray (N7) dolostone. Erosional surface within unit at base of light-gray (N7) zones.	3.5	2911.0
133	Dolostone, light-gray (N7), weathers light-gray (N7) to yellowish-gray (5Y8/1), very fine-grained to micrograined. The upper 1 foot of the unit grades into sandstone, white (N9), weathers white (N9), fine- to medium-grained, subrounded to subangular, siliceous cement.	2.5	2907.5
132	Dolostone, brownish-gray (5YR4/1), weathers medium-light-gray (N6), very fine-grained, medium-bedded, well-indurated, lighter gray in upper 3- to 4-feet.	24.5	2905.0
131	Dolostone, very light-gray (N8), weathers very light-gray (N8), very fine-grained, medium (0.5')- to thick-bedded (3'), well-indurated, with thin, light-gray (N7) sandstone lenses at base of unit. Gradational lower contact.	19.5	2880.5
130	Sandstone, white (N9) with pinkish-gray (5YR8/1) splotches, weathers white (N9) to very light-gray (N8), fine- to medium-grained, subrounded to subangular, silicate cemented quartz grains, with sparse, thin lenses of very light-gray (N8), very fine-grained dolostone.	3.0	2861.0
129	Dolostone, in beds and lenses that range from light-gray (N7), weathers light-gray (N7), fine-grained, to very light-gray (N8), weathers very light-gray (N8), very fine-grained, to very pale-yellowish-brown (10YR7/2), weathers very pale-yellowish-brown (10YR7/2), to pale-yellowish-brown (10YR6/2), fine- to medium-grained, medium (4")- to thick-bedded (3'). Some beds have undulating surfaces.	51.5	2858.0
128	Mostly covered with sparse, isolated outcrops of dolostone and sandstone same as described in units 126 and 127.	11.5	2806.5
127	Dolostone and sandstone, similar to unit 126, except dolostone is predominant, with thin beds and lenses of sandstone and quartz grains "floating" in the dolostone.	7.5	2795.0
126	Sandstone, fine- to medium-grained, subrounded to subangular, thin (3")- to thick-bedded (1.5'), silicate cemented quartz grains, slightly dolomitic, interbedded with thin beds, lenses, and laminations of dolostone, very light---gray (N8), weathers very light-gray (N8), very fine-grained.	8.5	2787.5
125	Dolostone, light-gray (N7), weathers light-gray (N7), and light-brownish-gray (5YR6/1), weathers light-brownish-gray (5YR6/1), very fine-grained, medium (6")- to very thick-bedded (3'+). Chert zone 10 feet above base of unit. Patches of dolostone, pinkish-gray (5YR8/1), coarse-grained, from 14-15 feet above base of unit. Fine-grained dolostone with minor sandstone grades into overlying unit.	50.0	2779.0
124	Chert, light-gray (N7) to very light-gray (N8), crumbly weathering, with zones of quartz-sand grains and quartz-sand-centered oolites.	2.0	2729.0
123	Dolostone, very light-gray (N8), weathers very light-gray (N8), very fine-grained, in lower part overlain by dolostone, medium-light-gray (N6), weathers light-gray (N7), fine-grained with sandstone, very light-gray (N8), weathers light-gray (N7). Thick-bedded (1'+) throughout unit.	5.0	2727.0
122	Covered; sparse dolostone float.	46.0	2722.0
121	Mostly covered with small outcrops of dolostone and isolated thin beds of sandstone. Dolostone, dark-yellowish-brown (10YR4/2), weathers pale-yellowish-brown (10YR6/2), fine-grained, in lower part of unit to dolostone medium-dark-gray (N4), weathers medium-dark-gray (N4), very		

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
	fine-grained in middle of unit, to dolostone, very pale-yellowish-brown (10YR7/2), weathers very pale-yellowish-brown (10YR7/2), very fine-grained, near top. Sandstone, very light-gray (N8), weathers grayish-pink (5YR8/1), fine-grained, thin-bedded.	20.5	2676.0
120	Interbedded sandstone and oolitic chert. Sandstone, very light-gray (N8), weathers grayish-pink (5YR8/1), fine-grained, medium-bedded. Chert, oolitic, light-brownish-gray (5YR6/1), weathers pale-brownish-gray, coarse-grained, medium-bedded. Upper contact covered.	4.0	2655.5
119	Dolostone, medium-dark-gray (N4), weathers medium-gray (N5) to light-gray (N7), very fine-grained, mostly covered.	6.5	2651.5
118	Dolostone, same as unit 116. One silty layer 3 feet above base of unit. No chert present.	5.0	2645.0
117	Dolostone, medium-dark-gray (N4), weathers medium-dark-gray (N4), very fine-grained, medium (0.4")- to thick-bedded (1'+), slight petroliferous smell when broken. White (N9) dolostone stringers at several horizons.	12.0	2640.0
116	Dolostone, light-gray (N7), weathers medium-light-gray (N6), very finegrained, thin (2-3")- to thick-bedded (1.5'), moderately well-indurated, with stringers of black chert in one thin zone approximately 7 feet above base of unit. Upper contact covered.	9.5±	2628.0±
115	Sandstone, fine-grained, grading upward to dolostone which contains abundant rounded to sub-rounded, fine- to medium-grained, quartz-sand grains. "Rip-up" fragments of very pale orange (107R8/2), very fine-grained dolostone from 3 to 4 feet above base of unit.	5.0	2618.5
114	Dolostone, medium-light-gray (N6), weathers light-gray (N7) to very light-gray (N8), very fine-grained, medium (4")-bedded to very thick-bedded (3'+). Unit contains a discontinuous, lenticular, dark-gray (N3) to black (N1) shale, with sandstone stringers 3.5 feet above base of unit. Unit also contains sporadic dolomitic siltstone layers, widely space (vertically) silty dolostone layers, and sparse, thin, fine-grained sandstone lenses. Sparse erosional surfaces in the dolostone. Gradational lower contact.	17.0	2613.5
113	Sandstone, very light-gray (N8), weathers light-gray (N7) to light-brownish-gray (5YR6/1), fine-grained, with irregular blebs, rounded pebbles, and zones of dolostone, light-gray (N7) to pale-yellowish-brown (10YR6/2), very fine-grained. Sandstone grades upward into a dolostone, with quartz-centered oolites in upper 0.5 feet of unit. Oolites, very light-gray (N8) to white (N9) in a medium-light-gray (N6) dolostone matrix.	2.5	2596.5
112	Dolostone, light-brownish-gray (5YR6/1), weathers pale-yellowish-brown (10YR6/2) to moderate-yellowish-brown (10YR5/4), very fine-grained, medium (6")- to thick-bedded (1'+).	21.0	2594.0
111	Sandstone, quartz grains with a dolomite cement, very pale-orange (10YR8/2), weathers very pale-orange (10YR8/2) to "moderate"-pale-yellowish-brown, fine-grained with minor medium-grained, , thin (1")- to thick-bedded (3') moderately well-sorted, very clean. Sharp lower contact.	4.5	2573.0
	Copper Ridge Dolomite (773.5 feet).		
110	Dolostone, very light-brownish-gray (5YR7/1), weathers medium-light-gray (N6) to light-gray (N7), very fine-grained to fine-grained, medium-bedded (8") to very thick-bedded (3'+), with zones of white chalcedonic chert nodules and stringers in lower part. Dolostone grades upward into dolostone, brownish-gray (5YR4/1), weathers "medium"-brownish-gray (5YR5/1), fine-grained. Unit alternates between very light-brownish-gray dolostone and brownish-gray dolostone. Sparse algal structures at 67 feet above base of unit. Stylolites approximately 80 feet above base of unit. Algal mat material in approximately 4 inch wide, unoriented pieces is 105-110 feet above base of unit. Some of the algal material is cherty. Additional chert, dark-gray (N3), chalcedonic, fragments, layers, and blebs. Sparse chert, pale-yellowish-brown (10YR6/2) layers approximately 150 feet above base of unit. Much of the unit is high up on roadcut.	160.0	2568.5
109	Dolostone, brownish-gray (5YR4/1), weathers "medium"-brownish-gray (5YR5/1), fine-grained, medium-bedded, petroliferous odor when broken. Sparse dolostone, white (N9), medium- to coarse-grained, in stringers and blebs approximately 23 feet above base of unit. Grades upward into dolostone, light-brownish-gray (5YR6/1), very thick-bedded. Sharp lower contact.	33.5	2408.5
108	Dolostone, similar to unit 106, but with white (N9) chert.	1.0	2375.0
107	Mostly covered from 2362-2374 feet.	12.0	2374.0
106	Dolostone, brownish-gray (5YR4/1), weathers very light-gray (N8), very fine-grained to fine-grained, medium-bedded (4"-1'), with sparse medium-gray (N5), chalcedonic chert stringers.	3.0	2362.0
105	Dolostone, brownish-gray (5YR4/1), weathers light-brownish-gray (5YR6/1), fine-grained, thin (2")- to medium-bedded (1'+), petroliferous odor when broken. Sharp lower contact.	5.0	2359.0
104	Dolostone, very light-gray (N8), weathers pale-yellowish-brown (10YR6/2) to very pale-orange (10YR8/2), very fine-grained to fine-grained, medium (6")- to thick-bedded (1'+), moderately well-indurated, with sparse lenses of dolostone with fine- to medium-grained quartz-sand grains. Covered from 9-11 feet above base of unit.	12.0	2354.0

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
103	Dolostone, brownish-gray (5YR4/1), weathers brownish-gray (5YR4/1), fine- to medium-grained, medium (6")- to thick-bedded (1-1.5'), moderately well-indurated. Lower contact covered.	8.0	2342.0
102	Covered. Sparse outcrops (1 or 2, each 1-2' thick) of dolostone on a hillside about 20' across a ditch. Jacob Staff & Abney Level was used to measure southward along the road; section projected from the east to west side of Rte. 72 and several hundred feet (horizontal) to the south along Rte. 72.	118.0	2334.0
101	Dolostone, light-brownish-gray (5YR6/1), weathers medium-light-gray (N6), very fine-grained, thick-bedded (3') to very thick-bedded (4'). Sharp lower contact.	14.5+	2216.0+
100	Dolostone, light-brownish-gray (5YR6/1), weathers light-gray (N7) to pinkish-gray (5YR8/1), fine-grained, medium- to thick-bedded.	11.0	2201.5
99	Dolostone, light-gray (N7), weathers light-gray (N7), very fine-grained, grades upward into dolostone, light-brownish-gray (5YR6/1), weathers light-gray (N7) to pinkish-gray (5YR8/1), fine-grained. Thin (2-3")- to medium (1')-bedded throughout unit. Sparse vugs with dolomite crystals. Cherty.	20.9	2190.5
98	Dolostone, same as unit #96, with sharp upper and lower contacts.	1.1	2169.6
97	Dolostone, oolitic, same as unit # 95. No sandstone.	0.5	2168.5
96	Dolostone, same as unit # 91, except sharp upper and lower contacts.	3.7	2168.0
95	Sandstone in lower 0.1' to oolitic dolostone in upper 0.7'. Sandstone, very light-gray (N8), weathers very light-gray (N8), medium- to coarse-grained, dolomitic. Dolostone, "salt & pepper" medium-gray (N5) and white (N9), weathers brownish-gray (5YR4/1) and pinkish-gray (5YR8/1), oolitic to sandy, oolites are quartz-sand-grain centered, with thin concentric layer surrounding grains.	0.8	2164.3
94	Dolostone, light-gray (N7), weathers light-gray (N7) to medium-light-gray (N6), very fine-grained, medium-bedded. Dolostone, medium-dark-gray (N4), weathers medium-dark-gray (N4), very fine-grained, 4.0 to 4.5 feet from base of unit. Sparse silty laminations on weathered surface, gradational lower contact.	10.0	2163.5
93	Dolostone, medium-dark-gray (N4), weathers medium-dark-gray (N4), becomes lighter gray approximately 6-7' above base of unit, very fine-grained, thin- to medium-bedded (2-3"), gradational upper and lower contacts. Dolostone, dark-gray, oolitic, from 7.0 to 7.5 feet above base of unit. Some of the dolostone has a petroliferous odor when broken. Dolostone, light-gray (N7), very fine-grained near top of unit. Upper 1' of unit is dolostone, medium-dark-gray (N4), oolitic. Sparse chert nodules near top of unit. Gradational upper and lower contacts.	20.0	2153.5
92	Dolostone, same as unit # 90, with sparse, dark-gray dolostone stringers near top.	3.5	2133.5
91	Dolostone, medium-dark-gray (N4), weathers medium-dark-gray (N4), very fine-grained, medium-bedded (1'), gradational upper and lower contacts.	2.5	2130.0
90	Dolostone, light-gray (N7), with faint splotches of very light-gray (N8), weathers light-gray (N7) to medium-light-gray (N6) with faint splotches of very-light-gray (N8), fine- to coarse-grained, sugary or sucrosic texture, generally very thick-bedded (3'+) with sparse thick beds (1').	38.5	2127.5
89	Dolostone, medium-dark-gray (N4) to brownish-black (5YR2/1), weathers medium-gray (N5), fine- to medium-grained, clotted with stringers and blebs of white (N9), fine- to medium-grained dolostone. Isolated intervals of finer grained dolostone; zones of white dolostone forms prominent lenses; dolostone lenses medium-light-gray (N6), very fine-grained; and balls and stringers of oolitic dolostone. Sparse black chert and white chert nodules and stringers approximately 15' above base of unit.	167.0	2089.0
88	Dolostone, same as unit # 84, with some thin, darker streaks within the beds.	2.0	1922.0
87	Dolostone, same as unit # 73.	2.7	1920.0
86	Dolostone, same as unit # 84. Sharp, undulatory lower contact on "algal" mounds.	3.8	1917.3
85	Dolostone, same as unit # 73, plus large (5' wide x 2' high) hummocky beds (algal stromatolites?).	8.9	1913.5
84	Dolostone, medium-light-gray (N6), weathers light-gray (N7), very fine-grained, medium-bedded, well-indurated.	1.8	1904.6
83	Dolostone, same as unit # 73. Sharp, erosional lower contact.	4.0	1902.8
82	Dolostone, same as unit # 70. Gradational lower contact.	1.5	1898.8
81	Dolostone, same as unit # 73.	1.0	1897.3
80	Dolostone, same as unit # 70. Sharp, erosional lower contact.	5.5	1896.3
79	Dolostone, same as unit # 73. Sharp lower contact.	2.5	1890.8
78	Dolostone, same as unit # 70.	2.2	1888.3
77	Dolostone, same as unit # 73.	2.6	1886.1
76	Dolostone, same as unit # 70.	5.0	1883.5
75	Dolostone, same as unit # 73.	0.8	1878.5
74	Dolostone, same as unit # 70. Covered from 8-13' above base of unit.	39.7	1877.7
73	Dolostone, medium-dark-gray (N4) to brownish-gray (YR4/1), weathers medium-light-gray (N6),		

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
	with stringers and blebs of white (N9), fine- to medium-grained dolostone. Petroliferous odor when broken. Sharp lower contact.	2.0	1838.0
72	Dolostone, same as unit # 70.	4.0	1836.0
71	Dolostone, medium-gray (N5), weathers light-gray (N7), very fine-grained. Lower 1 foot is dolostone, brownish-black (5YR2/1), weathers olive-black (5Y2/1), fine-grained, clotted. These two lithologies form a thick-bedded unit with sharp, erosional lower contact.	3.0	1832.0
70	Dolostone, light-gray (N7) to very light-gray (N8), weathers light-gray (N7) to very light-gray (N8), fine-grained, thick-bedded (1-2') with some medium-beds in middle of unit, well-indurated, some irregular (erosional) surfaces between beds, sharp contact with underlying unit. Thin (1/2"), dark-gray (N3), fine-grained sandstone 31' from base of unit.	34.0	1829.0
	Maynardville Formation (135.0 feet).		
69	Dolostone, medium-gray (N5), weathers very light gray (N8), very fine grained, thin(2")- to medium (4-5")-bedded, laminated within the beds, flaggy to shaly parting, well-indurated.	9.0	1795.0
	****Note: Units 63-68 were measured and described from outcrops on west side of Rte. 72. Then unit 67, which is very distinctive, was located approximately along strike on the east side of State Highway 72. The previous description of unit 68 from west side of road was used, and measurements and descriptions continued on the east side of the road.***		
	Unit 68: 1750-1765' measured & described on west side of road.		
	Unit 68: 1765-1786' measured & described on east side of road		
68	Dolostone, medium-dark-gray (N4), weathers light-gray (N6), very fine-grained, medium (approx. 6")- to thick (approx. 1-1 1/2')-bedded, sparse zones of straticulate ("pinstripe") laminations. 6.5 feet above base of unit is a 0.8-foot thick, oolitic dolostone unit. Oolites are small and quartz-grained-centered with only a few concentric bands. Sparse zone of prominent stylolites with black material on the surface.	36.0	1786.0
67	Dolostone, pale-yellowish-brown (10YR6/2), weathers pale-yellowish-brown (10YR7/2), very fine-grained to fine-grained, ranges from dense to slightly porous, with calcite crystals in vugs, stromatolite "algal-head" structures up to 2 feet high x 2 feet wide. Calcite vugs are most abundant on top of stromatolites. Lower ~1 inch is a thin layer of dark-yellowish-brown (10YR4/2), fissile, laminated shale. Sharp boundary below and above the shale.	3.0	1750.0
66	Dolostone, medium-light-gray (N6), weathers light-gray (N7) to very light-gray (N8), very fine-grained, thin (>4")- to medium (1')-bedded, straticulate ("pinstrips") laminations, scattered calcite blebs and minor soft-sediment deformation in upper 6 inches.	4.5	1747.0
65	Dolostone, dark-gray (N3), weathers medium-light-gray (N6) to light-gray (N7), very fine-grained, thick-bedded (approx. 3'), massive parting, well-indurated.	3.5	1742.5
64	Limestone, brownish-gray (5YR4/1) and pale-yellowish-brown (10YR6/2), weathers medium-gray (N5) to light-brownish-gray (5YR6/1), very fine-grained to fine-grained, thick- to very thick-bedded, massive parting; contains sparse dark-yellowish-brown (10YR4/2) limestone pebbles, and vugs of sparse calcite crystals.	8.0	1739.0
63	Limestone, medium-dark-gray (N4), weathers medium-light-gray (N6), with medium-dark-gray (N4), with grayish-orange (10YR7/4) weathered mottling and ribbon-bedding, very fine-grained, medium (<1')- to thick-bedded (>3'). Mottled zones are commonly more abundant than limestone blebs and beds. Some limestone appears to be rip-up clasts. Sparse stylolites in the limestones are parallel to bedding.	71.0±	1731.0 ±
	Nolichucky Formation (422.0 feet).		
62	Shale, with interbedded siltstone, limestone, and sandstone. Shale, olive-gray (5Y4/1), weathers olive-gray (5Y4/1), massive, but weathers papery to platy, fissile. Siltstone, dark-yellowish-brown (10YR4/2), weathers dark-yellowish-brown (10YR4/2), with a sheen. Limestone, medium-light-gray (N6), weathers dark-yellowish-brown (10YR4/2) to pale-yellowish-brown (10YR6/2) with splotches of moderate-yellowish-brown (10YR5/4) and grayish-orange (10YR7/4), very fine-grained to fine-grained, medium-bedded (0.5-1'), with some silty partings. Some limestone beds contain elongate, horizontal to sub-horizontal limestone pebbles (2-3" x 1/2") (rip-up clasts). Sandstone, very pale-yellowish-brown (10YR7/2), weathers pale-yellowish-brown (10YR6/2) with a sheen, very fine-grained to fine-grained, generally thin-bedded, well-sorted, minor closely-spaced, regular silty partings, sharp contacts. Sandstone, medium-gray (N5), weathers grayish-orange (10YR7/4) to dark-yellowish-orange (10YR6/6), with greenish-gray (5G5/2) glauconite grains that weather to dusky-green (5G3/2), medium- to coarse-grained quartz and glauconite grains in a very fine- to fine-grained quartz matrix. The shale, limestones, and sandstones are similar to those in unit # 61; however, the shale is more prominent in this unit. Much of the upper part of the Nolichucky Shale is covered through this interval.	325.0±	1660.0

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
61	Shale, with interbedded limestone and sandstone. Shale olive-gray (5Y4/1), weathers olive-gray (5Y4/1), and silty shale, dark-yellowish-brown (10YR4/2), weathers dark-yellowish-brown (10YR4/2), with a sheen. Both shales are massive, but weather papery to platy, fissile. Limestone, medium-light-gray (N6), weathers dark-yellowish-brown (10YR4/2) to pale-yellowish-brown (10YR6/2) with splotches of moderate-yellowish-brown (10YR5/4) and grayish-orange (10YR7/4), very fine-grained to fine-grained, medium-bedded (0.5-1'), with some silty partings. Some limestone beds have elongate, limestone pebbles (2-3" x 1/2") oriented parallel to bedding (rip-up clasts). Lower limestone contact is gradational with shale, upper contact is sharp. Commonly limestone beds are widely separated by shale. Sandstone, very-pale-yellowish-brown (10YR7/2), weathers pale-yellowish-brown (10YR6/2) with a sheen, very-fine- to fine-grained, generally thin-bedded, quartz grains, well-sorted, minor closely-spaced, regular silty partings, sharp contacts. Sandstone, medium-gray (N5), weathers grayish-orange (10YR7/4) to dark-yellowish-orange (10YR6/6), with greenish-gray (5G5/2) glauconite grains that weather dusky-green (5G3/2), medium- to coarse-grained quartz and glauconite grains in a very fine-grained to fine-grained quartz matrix.	97.0	1335.0
	Maryville Limestone (813.5 feet). Upper contact is covered but no limestone is exposed above shale and very-fine-grainedsandstone of overlying Nolichucky Formation		
	At this point the section was measured in southeast direction to top of hill near 1800' elevation on the topographic map. At the top of the Maryville (uppermost limestone with shale float above), the contact was traced south-southwet down the nose of the hill to a gravel road and creek. The Nolichucky shale was located 10-15' above the uppermost limestone outcrop in this area. Projecting west southwest, this matches up with the limestone and shale contact on east side of State Highway 72. Measurements continued from the top the of limestone outcrop (1238') along State Highway 72.		
60	Limestone, medium-dark-gray (N4), weathers pale-yellowish-brown (10YR6/2), micrograined, becomes very fine-grained 84 feet above base of unit, medium-bedded to very thick-bedded, irregular thin, pale-yellowish-brown (10YR6/2) silty partings throughout, flaggy parting 25' above base of unit. Limestone, brownish-gray (5YR4/1), weathers medium-gray (N5), fine- to medium-grained, thick-bedded to very thick-bedded, oolitic in part, some micrograined. Silty limestone beds same as in unit # 58. Unit forms ledge-and-slope topography.	102.0	1238.0
59	Limestone, brownish-gray (5YR4/1), weathers medium-gray (N5), fine- to medium-grained, thick-bedded to very thick-bedded, oolitic in part, some micrograined, silty limestone beds same as in unit # 58, forms ledge-and-slope topography.	40.0	1136.0
58	Limestone, medium-dark-gray (N4), weathers pale-yellowish-brown (10YR6/2), micrograined, medium-bedded to very thick-bedded, irregular thin, pale-yellowish-brown (10YR6/2) silty partings throughout.	47.0	1096.0
57	Limestone, grayish-brown (5YR3/2), weathers olive-gray (5Y4/1), very fine-grained, medium- to thick-bedded, well-indurated, occasional slight petroliferous odor when broken, forms slope-and-ledge topography, lower contact covered.	26.0	1049.0
56	Dolostone, grayish-brown (5YR3/2), weathers very-pale-yellowish-brown (10YR7/2), fine-grained, thick-bedded, even-bedded, moderately well-indurated, forms slope-and-ledge topography.	59.0	1023.0
	****Units 56,57,58 are in a wooded area with limited exposures. Details such as sedimentary structures were obscure. Other lithologic descriptions are accurate.***		
55	Mostly covered; only lowestmost 6' is exposed but some is out of place and other is broken up, probably by roadwork.	119.4	964.0
54	Limestone, same as unit # 32.	1.6	844.6
53	Limestone, same as unit # 51, but silty partings are more regular and continuous.	11.5	843.0
52	Covered.	5.5	831.5
51	Limestone, medium-gray (N5) with light-brownish-gray (5YR6/1) mottling, weathers medium-light-gray (N6) with very pale-brownish-gray (10YR7/2) mottling, very fine-grained with fine-grained in mottling.	6.0	826.0
50	Covered.	22.0	820.0
49	Limestone, same as unit # 32 except contacts not seen.	3.5	798.0
48	Covered.	4.5	794.5
47	Limestone, medium-dark-gray (N4), with very pale-orangish-brown (10YR7/2) mottling, weathers light-gray (N7) with very pale-orange (10YR8/2) partings, very fine-grained.	1.0	790.0
46	Covered, except for 1-foot outcrop of limestone 6-7 feet above base of unit. Limestone is same as unit # 45.	17.5	789.0

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
45	Limestone, dark-gray (N3), weathers medium-gray (N5) with medium-dark-gray (N4) mottling, very fine-grained, irregular silty layers, moderately well indurated.	4.5	771.5
44	Covered.	18.5	767.0
43	Limestone, same as unit # 35, thick-bedded to very thick-bedded (2-4'), contains stylolites, upper contact covered.	14.9	748.5
42	Limestone, same as unit # 32.	3.0	733.6
41	Limestone, same as unit # 35.	9.8	730.6
40	Limestone, same as unit # 32.	0.9±	720.8
39	Limestone, same as unit # 35.	1.2	719.9
38	Limestone, same as unit # 32.	0.9	718.7
37	Limestone, same as unit # 35.	0.4	717.8
36	Limestone, same as unit # 32.	1.9	717.4
35	Limestone, medium-light-gray (N6), weathers medium-gray (N5), with light-gray (N7) mottling, very fine-grained, contains calcisponges(?).	0.3	715.5
34	Limestone, same as unit # 32.	1.2	715.2
33	Limestone, same as unit # 31.	1.8	714.0
32	Limestone, medium-dark-gray (N4), weathers medium-light-gray (N6), fine-grained, very thick-bedded (approx. 4'), oolitic, sharp lower contact, gradational upper contact.	4.2	712.2
31	Limestone, alternating layers of mottled limestone with calcisponges(?) and layers of oolitic limestone. Mottled limestone, medium-light-gray (N6), weathers light-gray(N7), very fine-grained, with calcisponges. Oolitic limestone, medium-dark-gray (N4), weathers medium-light-gray (N6), fine-grained, with abundant oolites. Sharp erosional contact with oolitic limestone above mottled limestone, gradational contact with mottled limestone above oolitic limestone. Stylolites. Lower contact covered.	1.5+	708.0
30	Covered.	3.0	706.5
29	Limestone, medium-gray (N5), weathers medium-gray (N5) to very light-gray (N8) with pale-yellowish-brown (10YR6/2) mottling, very fine-grained, very thick-bedded (+3'), well-indurated, contains calcisponges (?). Upper and lower contacts covered.	12.5	703.5
28	Covered.	50.0	691.0
27	Limestone, medium-gray (N5), weathers very pale-yellowish-brown (10YR7/2) to medium-light-gray (N6), fine-grained matrix with quartz-grained centered oolites, medium- to thick-bedded (6"-1.5'), well-indurated, upper contact covered.	4.0	641.0
26	Limestone, medium-gray (N5), weathers mottled medium-light-gray (N6) and light-gray (N7), micrograined with fine-grained zones in upper part, very thick-bedded (3-4'), grades to very thick-bedded to thick-bedded (approximately 1') in upper part of section, well-indurated, contains calcisponges(?). Thin, abundant to sparse black layers and some stylolites. On some highly weathered surfaces it has a ribbon-banded appearance. Thin (approximately 3" in thickness) fossil hash zone. Covered from 582-593' and 619.5-622.5'.	124.0	637.0
25	Limestone, dark-gray (N3), weathers medium-dark-gray (N4), micrograined to fine-grained, commonly thick-bedded (1-2'), with abundant black paper-thin, irregular layers, well-indurated, emits petroliferous odor when broken.	12.0	513.0
24	Limestone, medium-gray (N5), weathers light-gray (N7), micrograined to fine-grained, with mottled limestone light-bluish-gray (5YR6/1), weathers medium-gray (N5), fine-grained, medium- to thick-bedded (4"-2'), some beds thin laterally, well-indurated. Silty zones are more prominent in upper 5 feet, giving the rocks a ribbon-banded appearance.	26.0	501.0
23	Limestone, dark-gray (N3), weathers light-gray (N7), micrograined to very fine-grained, very thick-bedded (+6'), with grayish-orange (10YR7/4) silty partings which give the unit a ribbon-banded appearance. Up section the silt comprises as much as 50% of the limestone. Gradational lower contact over approximately 2 feet with underlying shale. Covered from 472.5-480.0 feet but probably still limestone.	50.5	475.0
	Rogersville Shale (83.5 feet).		
22	Shale, grayish-black (N2), weathers olive-gray (5Y4/1), papery parting, fissile, thin (0.2') interbeds of limestone, medium-dark-gray (N4), weathers pale-yellowish-orange (10YR8/6), very fine-grained.	25.0	424.5
21	Interbedded shale, limestone, and dolostone. Shale, grayish-black (N2), weathers olive-gray (5Y4/1), papery parting, fissile. Limestone, medium-dark-gray (N4), weathers pale-yellowish-orange (10YR8/6), very fine-grained, sparse calcite on fractures, sparse stylolites, well-indurated. Limestone is 3.8-4.6 feet, 10.1-10.5 feet, and 13.0-15.0 feet above base of unit. Dolostone, medium-dark-gray (N4), weathers pale-yellowish-orange (10YR8/6), very fine-grained. Dolostone from 0-1.8 feet above base has slight petroliferous smell when broken.	15.0	399.5

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
20	Shale, with minor dolostone and sandstone. Shale, grayish-black (N2), weathers olive-gray (5Y4/1), papery parting, fissile. Dolostone, dark-gray (N3) to brownish-gray (5YR4/1), weathers medium-gray (N6) to dark-gray (N3), fine-grained, 3.2-5.2 feet above base of unit. Sandstone, quartzose, dark-gray (N3) with grayish-green (5G5/2) glauconite grains, weathers pale-yellowish-orange (10YR8/6) to dark-yellowish-orange (10YR6/6), fine- to medium-grained, contains minor pyrite disseminated within minor rounded clay pebbles. Sandstone is 12.2-13.0 feet and 32.7-33.9 feet above base of unit. Upper sandstone becomes dolomitic in upper 0.3 feet of unit. Additional thin sandstone lenses throughout the unit.	41.7	384.5
19	Siltstone, dark-yellowish-brown (10YR4/2), weathers dark-yellowish-brown (10YR4/2) to moderate-yellowish-brown (10YR5/4), moderately well indurated with paper thin, sparse gray carbonaceous layers.	0.5	342.8
18	Shale, moderate-olive-gray (5GY4/2), weathers olive-gray (5Y4/1), irregular shaly parting. Sharp contact with underlying dolostone (unit #17).	1.3	342.3
	Rutledge Formation (262.0 feet).		
17	Dolostone, same lithology as unit #14, except no limestone present, thick-bedded (approximately 3'), with silty partings 4 inches apart (these do not split the layers). Stylolites 10 and 46 feet above base of unit, with dark clay residuum. Quartz vein present approximately 20 feet below top of unit. Approximately 10 feet below top of unit are irregular pyrite veins (<1/8" thick) that extend laterally at least 20 feet. Sparse dolomite crystals near top of unit.	66.3	341.0
16	Dolostone, same lithology as unit #14, except no limestone present, thin- to medium-bedded (<4'-1'), with silty partings near top and bottom.	27.0	274.7
15	Dolostone, same lithology as unit #14, except no limestone present, medium- to thick-bedded (approx. 1'-3'), beds bounded by silty zones (<1/8" thick) above and below.	24.0	247.7
14	Dolostone, with lesser limestone. Dolostone, medium-gray (N4) to brownish-gray (5YR4/1), weathers medium-gray (N5) to medium-brownish-gray (5YR5/1), fine-grained, very thick-bedded (>3'), well-indurated. Limestone, dark-gray (N3), weathers medium-dark-gray (N4), very fine-grained. Limestone layers grade to dolostone with no apparent contact (limestone just has a more bluish-gray appearance than the brownish-gray dolostone). Sparse thin (approx. 1/2") stringers of brownish-gray, coarse-grained dolostone. Irregular dark (almost black) layer 5.1 feet above base, wavy (1/8 ±" thick), extends laterally at least 10 feet.	26.0	223.7
13	Limestone, same as unit #11. Dolostone zones from 3.3-5.5 feet and 10.7-12.5 feet above base of unit. Dolostone, brownish-gray (5YR4/1), weathers medium-brownish-gray (5YR5/1), fine- to medium-grained, gradational upper and lower contacts. A clotted zone of dolostone, medium-gray (N5) to brownish-gray (5YR4/1), weathers pale-brown (5YR5/2), fine-grained that is within dolostone, white (N9), coarse-grained is 12.5-14.7 feet above base of unit. The dark dolostone has some thin (1"± thick) laminated layers.	14.7	197.7
12	Limestone, same as 5a 0.8 Limestone, same as 5b 1.3 Limestone, same as 5c 0.9	3.0	183.0
11	Limestone, medium-dark-gray (N4), weathers medium-dark-gray (N4) with medium-gray (N5) mottling, very fine-grained, generally very thick-bedded (>3') with local occurrences of thin- to thick-beds, sparse stylolites, well-indurated, gradational contact with underlying unit 10; calcite veinlets throughout (probably due to tectonic movement).	28.8	180.0
10	Limestone, same as 5a 2.1	2.1	151.2
9	Limestone, same as 5c 2.3 Limestone, same as 5a, with thin interbeds (approx. .1'-.5') of very fin-grained, dense limestone. 2.8'.	5.1	149.1
	****Note: A disturbed zone is above unit 8. It appears to be a joint set with minimal displacement. Measurements were completed to factor out duplication across disturbed zone.***		
8	Limestone, same as 5c 2.2 Limestone, same as 5b 2.2 Limestone, same as 5a 1.2	5.6	144.0
7	Limestone, same as 5c 1.4 Limestone, same as 5b 1.2 Limestone, same as 5a 1.6	4.2	138.4
6	Limestone, same as 5c 1.4 Limestone, same as 5b 1.3 Limestone, same as 5a 5.5	8.2	134.2
5	Limestone. Unit has 3-fold division with ribbon-banded limestone (**a**) overlain by mottled limestone (**b**), grades upward into thicker bedded limestone with minor silt (**c**).		

UNIT	DESCRIPTION	UNIT THICKNESS (FEET)	CUMULATIVE THICKNESS (FEET)
	(unit c) Limestone, dark-gray (N3) to grayish-black (N2), weathers medium-dark-gray (N4), very fine-grained, thick-bedded (.7'-1.4'), minor silty mottling at 0-0.5 feet above base of unit, gradational contact with unit b. Stylolites at basal contact. Unit c is 1.9' thick. **(unit b)** Limestone, dark-gray (N3), weathers medium-gray (N5), mottled zones of light-olive-gray (5Y6/1), very fine-grained, medium- to thick-bedded (.4-1.5'), stylolites, some siltstone has sharp erosional contacts with underlying limestone. Unit b is 2.4' thick. **(unit a)** Limestone, dark-gray (N3), weathers light-gray (N7) with yellowish-gray (5Y7/2) silty ones present on weathered surface, very fine grained, ribbon-banded (irregular silty partings approx. 1/2-1" apart vertically). Some silty zones have sharp erosional contact with underlying limestone. Unit a is 1.0' thick. **0-11' of unit 5 measured but unable to describe. 11-38' covered by road. Described from 39'-47'.	47.0	126.0
	Rome Formation (79.0+ feet).		
4	Limestone and shale, similar to unit #2. Unit becomes mostly limestone up section.	32.0	79.0
3	Limestone, similar to unit #1, with shale and thin beds, lenses, and stringers of limestone and siltstone.	12.0	47.0
2	Limestone, with thin shale laminations and beds. Limestone, medium-dark-gray (N4) with splotches of moderate-yellowish-brown (10YR5/4), weathers medium-light-gray (N6) to grayish-orange (10YR7/4), very fine-grained, thin-bedded to very thick-bedded (4"), ribbon-banded, moderately well indurated, contains sparse calcisponges(?). Shale, very pale-yellowish-brown (10YR7/2), irregular, lenticular, fissile. Travertine coats surface of much of ribbon-banded limestone. Unit is predominantly shale with interbedded limestone in upper part of unit.	19.0	35.0
1	Shale, with thin beds, lenses and stringers of siltstone, sandstone, and limestone. Shale, dark-greenish-gray (5GY4/1), weathers moderate-dark-greenish-gray (5GY5/1), thinly laminated to laminated, even laminations with sparse irregular laminations, fissile. Siltstone to very fine-grained sandstone, medium-light-gray (N6), weathers moderate-yellowish-brown (10YR5/4) to pale-yellowish-brown (10YR6/2), irregular bedded to lenticular, moderately well-indurated, slightly calcareous. Interbeds of limestone are thicker (approx. 1') and more abundant in upper part of unit. Limestone, olive gray (5Y4/1), weathers light-gray (N7) to grayish-orange (10YR7/4), very fine-grained, thin- to medium-bedded, moderately well-indurated.	16.0	16.0

Postmaster:
Send address corrections to:
Virginia Division of Mineral Resources
P. O. Box 3667
Charlottesville, VA 22903

Virginia Minerals
Second-Class postage paid at
Charlottesville, VA
ISSN0042-6652

NEW PUBLICATIONS

Publication 154 Geology of the Glasgow and Buena Vista quadrangles, Virginia with cross sections and structural maps, by Edgar W. Spencer, Parts A, B, and C, color 1:24,000 geologic maps, 2000. **Price: $9.60**

Publication 155 Geologic map of the Virginia portion of Elkins 30 x 60 minute quadrangle, by E. K. Rader and G. P. Wilkes, color 1:100,000 scale geologic map, 2000. **Price: $6.00**

Publication 164 Directory of the mineral industry in Virginia - 2001, by Palmer C. Sweet, 24 pages, 2001.**Price: $5.00**

GEOLOGIC MAPS IN-PRESS

Available after June 15, 2001

Publication 156 Geologic map of the Virginia portion of the Peterstown quadrangle, by T. M. Gathright, II and E. K. Rader, scale 1:24,000, full color, 2001.

Publication 159 Geologic map of the Augusta, Page, and Rockingham Counties portion of the Charlottesville 30 x 60 minute quadrangle, by E. K. Rader and T. M. Gathright, II, scale 1:100,000, full-color, 2001.

Publication 160 Geologic map of the Virginia portion of Lindside quadrangle, by A. P. Schultz and . B. Stanley, scale 1:24,000, full-color, 2001.

Publication 161 Geologic map of the Virginia portion of the Winchester 30 x 60 minute quadrangle, by E. K. Rader, R. C. McDowell, T. M. Gathright, II, and R. C. Orndorff, scale 1:100,000, full-color, 2001.

NEW MAPS-ON-DEMAND AVAILABLE

MOD-35 Mined portion and extent of the Tiller coalbed in Southwest Virginia, by Roy S. Sites and Rebecca S. Hope, 2000, scale 1:150,000 **$18.00**

MOD-36 Mined portion and extent of the Upper Banner coalbed in Southwest Virginia, by Roy S. Sites and Rebecca S. Hope, 2001, scale 1:100,000 **$18.00**