

Operator: Clinchfield Coal Company  
 Farm: Virginia Coal & Iron Company  
 Well No.: 217  
 Location: Wise County  
           13,500' S. of 37°00'  
           10,250' W. of 82°45'  
 Elevation: 2049.5' Ground  
 Total Depth: 5364'  
 Drilling Commenced: 10/8/60  
 Well Completed: 3/31/61  
 Result: Gas well

Geologic log  
 Samples studied and described  
 by: John M. Wilson  
 Virginia Division of  
 Mineral Resources  
 August, 1962

## GEOLOGIC LOG

<u>Depth (feet)</u>	<u>Interval</u>	<u>Description</u>
<u>PENNSYLVANIAN SYSTEM (0-2904)</u>		
<u>POTTSVILLE GROUP (0-2904)</u>		
<u>Wise formation (0'-1024')</u>		
0 - 60	60	Sandstone, light gray, moderately hard, fine-to medium-grained, medium-sorted, sub-rounded to angular, interstitially silty, with: common mica. Slightly porous.
60 - 105	45	Sandstone, light gray to white, medium-to coarse-grained, medium-sorted, sub-rounded to sub-angular, with: rare chlorite and common mica. Nonporous to slightly porous.
105 - 135	30	Sandstone, gray, fine-to medium-grained, medium-sorted, sub-rounded to sub-angular, with: abundant chlorite, rare feldspar, and abundant mica. Slightly porous.
135 - 190	55	Siltstone, dark gray, hard, brittle, with: common mica, and rare chlorite and feldspar.
190 - 245	55	Sandstone, light to medium gray, moderately hard, fine-to medium-grained, medium-sorted, sub-rounded to sub-angular, with: rare chlorite and common mica. Slightly porous.
245 - 250	5	Coal, hard, impure in part. (Interpreted depth and thickness)
250 - 283	33	Siltstone, dark gray, hard, brittle, with: common mica.
283 - 325	42	Sandstone, light to medium gray, moderately hard, fine-to medium-grained, medium-sorted, sub-rounded to sub-angular, siliceous, with: rare chlorite, and common mica. Non porous to slightly porous.

325 - 381	56	Siltstone, dark gray, hard, slightly calcareous, with: common mica and rare carbonaceous material.
381 - 392	11	Sandstone, clear to white, fine- to medium-grained, medium-sorted, sub-rounded, interstitially silty, slightly calcareous, with: Common mica and rare chlorite. Porous.
392 - 435	43	Siltstone, light to dark gray, hard, brittle, locally fissile, calcareous, with: abundant mica, and abundant coal lamanae and partings.
435 - 522	87	Siltstone, dark gray to black, moderately hard, locally poorly fissile, with: rare mica, and common coaly carbonaceous material.
522 - 532	10	Sandstone, white, fine-grained, well sorted, sub-rounded, with: rare mica and rare chlorite. Slightly porous to porous.
532 - 562	30	Siltstone, dark gray to black, hard, brittle, locally fissile, with: common mica, and abundant coal lamanae and coaly carbonaceous material.
562 - 570	8	Sandstone, clear to white, moderately hard, fine-grained, well sorted, sub-rounded to sub-angular, slightly calcareous, with: common mica and chlorite. Slightly porous.
570 - 575	5	Shale, black, moderately soft, fissile, clayey, with: rare coaly carbonaceous material and lamanae, and common impure, silty coal.
575 - 599	24	Sandstone, as in 562 - 570.
599 - 603	4	Shale, as in 570-575
603 - 630	27	Sandstone, as in 562-570
630 - 721	91	Siltstone, light brownish gray to dark gray, hard, brittle, locally poorly fissile, with: rare mica, and rare coal lamanae and partings.
721 - 760	39	Sandstone, light gray, fine- to medium-grained, medium- to well-sorted, sub-angular, with: common mica, and rare feldspar. Slightly porous.
760 - 779	19	Siltstone, light to dark gray, hard, brittle, locally fissile, with: rare mica, and rare coal lamanae.
779 - 781	2	Coal, hard, in part silty and impure (Interpreted depth and thickness)

781 - 817	36	Siltstone, light to medium gray, hard, brittle, locally poorly fissile, with: common mica.
814		<u>Blair Coal Horizon</u> (No coal observed)
817 - 862	45	Sandstone, white to light gray, hard, very fine- to fine-grained, medium-sorted, sub-rounded, interstitially silty, slightly calcareous, with: rare chlorite, and common mica. Nonporous to slightly porous.
862 - 889	25	Sandstone, clear to white, hard, fine- to medium-grained, medium sorted, sub-rounded to sub-angular, calcareous, with: common chlorite and common mica. Slightly porous to porous.
889		<u>Lyons Coal Horizon</u>
889 - 1000	111	Siltstone, dark gray-brown to black, moderately hard, brittle, rare local fissility, calcareous, with: common mica, and rare coaly carbonaceous material and lamanae.
1000 - 1024	24	Sandstone, clear to white, moderately hard, fine- to medium-grained, medium-sorted, sub-rounded to sub-angular, slightly calcareous, with: common mica and rare chlorite. Nonporous to slightly porous.
<u>Norton Formation (1024'-2202')</u>		1024 - <u>Norton Coal Horizon</u>
1024 - 1109	85	Siltstone, dark gray to black, hard, brittle, locally fissile, with: rare mica, and abundant coaly carbonaceous material.
1109 - 1116	7	Sandstone, clear to white, fine- to medium grained, medium-sorted, sub-rounded to sub-angular, slightly calcareous. Slightly porous.
1116 - 1148	32	Siltstone, as in 1024 - 1109.
1148 - 1169	21	Sandstone, clear to white, moderately hard, medium-grained, medium- to well-sorted, sub-rounded, slightly calcareous, with: common mica, and rare chlorite. Porous.
1169 - 1295	126	Siltstone, medium gray to black, hard, brittle, locally poorly fissile, with: rare mica, and rare coaly carbonaceous material and lamanae.

1295 - 1323	28	Shale, phosphatic and sideritic, black, hard, brittle, good fissility, with: common mica and rare carbonaceous material.
1323 - 1330	7	Sandstone, white, moderately hard, fine- to medium-grained, medium to poorly-sorted, sub-rounded, slightly calcareous, with: rare mica. Slightly porous.
1330 - 1348	18	Siltstone, light gray to black, hard, brittle, with: common mica, and common coaly carbonaceous material.
1348 - 1392	44	Sandstone, white to light gray, moderately soft, fine-grained, well-sorted, sub-rounded to sub-angular, slightly calcareous, with: common mica. Porous.
1392		<u>Lower Banner Coal Horizon</u> (No coal observed)
1392 - 1420	28	Shale, phosphatic and sideritic, black, hard, brittle, good fissility, with: common mica, and rare carbonaceous material.
1420 - 1450	30	Siltstone, medium to dark gray, hard, brittle, rare local fissility, with: common mica, and rare coaly carbonaceous material.
1450 - 1552	102	Sandstone, clear to white, friable, fine-grained, well-sorted, sub-rounded, slightly calcareous, with: rare mica. Slightly porous to porous.
1552 - 1562	10	Siltstone, medium to dark gray, hard, brittle, rare local fissility, with: common mica.
1562 - 1590	28	Sandstone, clear, hard, fine- to medium-grained, medium-sorted, sub-rounded, interstitially silty, slightly calcareous, with: rare mica. Porous.
1590 - 1594	4	Siltstone, dark gray to black, hard, brittle, with: common mica, and abundant coaly carbonaceous material.
1594 - 1608	14	Sandstone, as in 1562 - 1590.
1608 - 1678	70	Sandstone, clear to light gray, hard, medium- to very coarse-grained, poorly sorted, sub-rounded to sub-angular, calcareous, with: common coaly carbonaceous material. Nonporous to slightly porous.
1678 - 1697	19	Sandstone, granule conglomeratic, clear to white and milky-white, hard, fine-grained, to granule, poorly sorted, sub-angular, slightly calcareous,

		with: rare mica, and common coaly carbonaceous material. Slightly porous to porous.
1697 - 1722	25	Sandstone, medium gray, hard, fine- to medium-grained, medium sorted, sub-rounded to sub-angular, calcareous, with: common mica and rare pyrite. Slightly porous.
1722 - 1745	23	Siltstone, light gray to black, moderately hard, brittle, with: common mica, rare chlorite and common coaly carbonaceous material.
1745 - 1747	2	Coal, in part impure (Interpreted depth and thickness)
1747 - 1798	51	Siltstone, as in 1722-1745
1798 - 1865	67	Siltstone, black, hard, brittle, locally fissile, slightly calcareous, with: common mica, and abundant coaly carbonaceous material.
1865		<u>Raven Coal Horizon</u>
1865 - 1982	117	Sandstone, clear to white, hard, medium-grained, well-sorted, sub-rounded, interstitially silty, slightly calcareous, with: rare mica and common coaly carbonaceous material. Slightly porous to porous.
1982 - 1990	8	Interbedded; Siltstone, black, hard, locally fissile, with: abundant mica, and abundant coaly carbonaceous material, with; Sandstone, as 1865 - 1982.
1990 - 2013	23	Siltstone, black, hard, brittle, with: common mica, and abundant coaly carbonaceous material.
2013 - 2144	121	Sandstone, clear to white, moderately hard, friable, medium-grained, medium- to well sorted, sub-rounded to sub-angular, interstitially silty, slightly calcareous, with: common mica, and common coaly carbonaceous material: Slightly porous to porous.
2144 - 2153	9	Sandstone, as above, but granule conglomeratic.
2153 - 2172	19	Siltstone, chloritic, pale green to light gray, hard, brittle, calcareous, with: abundant mica.
2172 - 2202	30	Siltstone, as above, with Sandstone, white to pale gray, hard, slightly friable, fine- to medium-grained, poorly- to medium-sorted, sub-rounded to sub-angular, interstitially silty, calcareous, with: common mica. Slightly porous to porous.

<u>Lee formation</u>		(2202' - 2904')
2202 - 2258	56	Sandstone, clear to pale greenish-gray, moderately hard, medium-grained, medium-sorted, sub-rounded to sub-angular, locally calcareous, with: common mica, and common carbonaceous-micaceous partings. Slightly porous to porous.
2258 - 2272	14	Interbedded; Sandstone, conglomeratic, white, moderately soft, friable, fine-grained to common granule, poorly sorted, sub-angular, calcareous, with: rare mica; and Siltstone, black, hard, locally poorly fissile, with coaly carbonaceous partings and lamanae.
2272 - 2302	30	Sandstone, <u>silty</u> , white, hard, very fine- to fine-grained, well-sorted, rounded, interstitially silty, calcareous, with: common mica, common carbonaceous material, and silty gray micaceous partings. Non-porous to slightly porous.
2302 - 2328	26	Sandstone, white, hard, fine- to medium-grained, medium- to well-sorted, sub-rounded to sub-angular, locally slightly calcareous, with: rare mica, and rare micaceous- silty-carbonaceous partings. Slight porosity.
2328 - 2334	6	Shale, coaly carbonaceous, dark gray to black, moderately soft, very fissile to locally silty, with: abundant coal and coal lamanae.
2334 - 2343	9	Siltstone, light to dark gray, moderately hard, rare local fissility, with: abundant coaly carbonaceous material, and rare mica.
2343 - 2366	23	Interbedded; Sandstone, white, hard, very fine- to fine-grained, medium- to well-sorted, sub-rounded, locally silty, with: rare mica, and carbonaceous material. Slightly porous to porous; with, Siltstone, light to dark gray, hard, locally poorly fissile, with: rare mica and rare coaly carbonaceous material.
2366 - 2388	22	Sandstone, conglomeratic, clear to milky white, hard, medium grained with rare to common granules, poorly sorted, sub-angular, interstitially silty, siliceous, with: common mica, and abundant silty, micaceous, carbonaceous partings. Nonporous to slightly porous.

2388 - 2403	15	Siltstone, dark gray, hard, locally poorly fissility, argillaceous, with: common mica, and common coaly carbonaceous material, and stringers of sandstone, as in 2366 - 2388.
2403 - 2423	20	Sandstone, white to light gray, moderately soft, friable, very fine- to fine-grained, well sorted, sub-rounded, interstitially silty, slightly calcareous, with: rare mica and common coaly carbonaceous material. Slightly porous.
2423 - 2450	20	Siltstone, dark gray to black, hard, brittle, locally poorly fissile, with: common mica, and rare silty carbonaceous partings.
2450 - 2484	34	Interbedded: Coal, silty, with Siltstone, as in 2423 - 2450.
2484 - 2500	16	Siltstone, as in 2423 - 2450.
2500 - 2510	10	Sandstone, white to light gray, moderately soft, friable, very fine- to fine-grained, well sorted, sub-angular, with: abundant coaly carbonaceous streaks. Slightly porous.
2510 - 2525	15	Shale, dark gray to black, moderately hard, fissile, with: common mica and rare coaly carbonaceous lamanae.
2525 - 2535	10	Interbedded: Shale, as above, with Siltstone, light gray, hard with: rare mica and rare coaly carbonaceous partings.
2535 - 2544	9	Siltstone and Shale, as above, with stringers of Sandstone, light gray, hard, very fine- to fine-grained, medium to well sorted, subrounded, interstitially silty and siliceous. Slightly porous.
2544 - 2710	166	Sandstone, conglomeratic, white to milky white, fine- to coarse-grained with abundant pebbles, poorly sorted, sub-rounded to sub-angular, locally slightly calcareous, with: abundant carbonaceous material. Nonporous to slightly porous.
2710 - 2782	72	Sandstone, clear, fine- to coarse-grained, with common very coarse, poorly sorted, sub-rounded to sub-angular, slightly calcareous, with: rare mica. Nonporous to slightly porous.
2782 - 2904	122	Sandstone, conglomeratic, clear to white, hard, fine- to medium-grained, with abundant granule-size, poorly-sorted, sub-rounded, slightly calcareous, with: rare mica, and rare chlorite.

MISSISSIPPIAN SYSTEM

PENNINGTON GROUP (2904 - 3555)

Bluestone formation (2904 - 3126)

2904 - 3017	113	Siltstone, dark gray to brown-gray, hard, brittle, locally poorly fissile, with: rare mica.
3017 - 3060	43	Shale, black and dark grayish-brown with rare reddish-brown, hard, brittle, moderately good fissility, locally finely sandy, locally calcareous, with: common mica.
3060 - 3126	66	Siltstone, light to dark gray, hard, brittle, no apparent fissility, locally calcareous, with: common mica, and common coaly carbonaceous partings and lamanae.

Hinton formation (3126 - 3555)

* 3126 - 3161	35	Siltstone, variegated, red, green, beige, and light to medium gray, hard, locally poorly fissile, calcareous, with: rare mica, and stringers of Limestone, light grayish-brown, oolitic, hard, microcrystalline, fossil fragmental (contains one brachiopod 6 mm wide).
3161 - 3190	29	Shale, red, with common to abundant greenish-gray, moderately hard, brittle, slightly calcareous, moderate fissility, locally silty, with: common mica, common carbonaceous material, and rare calcite nodules.
3190 - 3230	40	Siltstone, light to dark gray, with common red, otherwise as above.
3230 - 3245	15	Sandstone, light- to medium-gray, with light greenish-gray, moderately hard, friable, silty to very fine-grained, with common fine- to medium-grained, medium sorting, sub-rounded to well-rounded, interstitially silty, slightly calcareous, with: common mica, and common chlorite. Slightly porous.
3245 - 3286	41	Interbedded; Sandstone, as above, with; Siltstone, light to dark gray with common red, very hard, locally poorly fissile, with: common mica, and common coaly carbonaceous material.



3286 - 3345	59	Variegated Siltstone, red light gray to medium gray, with light greenish-gray, moderately hard, brittle, locally poorly fissile, with: common mica.
<u>Stony Gap Sandstone Member (3345 - 3555)</u>		
3345 - 3385	39	Sandstone, white to light gray with greenish-gray, moderately hard, silty to very fine-grained, medium- to well- sorted, sub-rounded to well-rounded, interstitially silty, locally slightly calcareous, with: common mica, rare pyrite, and common coaly carbonaceous material and lamanae. Nonporous to slightly porous.
3384 - 3413	29	Interbedded; Siltstone, carbonaceous, dark gray to black, moderately hard, brittle, commonly poorly fissile, argillaceous, with: common coaly material and lamanae, common mica, and common pyrite; with, Sandstone white to light gray, hard, silty to very fine-grained with rare fine-grained, medium-sorted, rounded, calcareous, with: common mica. Nonporous to slightly porous.
3413 - 3442	29	Sandstone, clear to white and light gray, moderately soft, friable, very fine- to fine-grained, medium- to well sorted, rounded to sub-angular, interstitially silty, calcareous, with: common mica, common pyrite, and rare carbonaceous material.
3442 - 3468	26	Sandstone, clear to white, moderately hard, very fine- to fine-grained with rare medium-grained, medium- to well-sorted, sub-rounded to sub-angular, interstitially silty, calcareous, with: rare mica, rare pyrite, and common carbonaceous material and lamanae. Nonporous to slightly porous.
3468 - 3485	17	Sandstone, as above, with stringers of red siltstone.
3485 - 3505	20	Siltstone, dark gray to black, very hard, locally poorly fissile, with: common carbonaceous material.
3505 - 3520	15	Interbedded; Siltstone, as above; with Sandstone, clear to light gray, very hard, very fine- to fine-grained, poorly sorted, sub-rounded to rounded, interstitially silty, slightly calcareous, with: common mica, and abundant, coaly carbonaceous material. Nonporous to slightly porous.

3520 - 3555            35            Sandstone, clear to light-grayish-brown, moderately hard, slightly friable, fine- to medium-grained, medium- to well- sorted, sub-rounded to sub-angular, slightly calcareous, with: rare mica, and common carbonaceous-micaceous partings. Nonporous.

Bluefield formation (3555 - 3785)

3555 - 3560            5            Interbedded; Shale, dolomitic, dark gray to black, moderately hard, fair fissility, clayey, with: common mica; with, Siltstone, medium gray and reddish-brown, moderately hard, calcareous, with: rare pyrite and common carbonaceous lamanae.

3560 - 3568            8            Shale and Siltstone, as above, with stringers of Limestone, medium gray oolitic, microcrystalline.

3568 - 3618            50           Shale and Siltstone, as in 3555-3560.

3618 - 3630            12           Shale and Siltstone, as in 3555-3560, with stringers of Limestone, medium gray, oolitic, microcrystalline.

3630 - 3642            12           Shale and Siltstone, as in 3555-3560.

3642 - 3665            23           Interbedded; Shale, medium gray to black, hard, brittle, fair fissility, calcareous, with: common pyrite, and common mica; with, Limestone, light to medium gray, rare fossil fragments, moderately soft, microcrystalline, very silty.

3665 - 3703            38           Siltstone, light to medium gray, very hard, rare poor fissility, calcareous, with: common mica, rare pyrite, and abundant shale fragments (contamination ?), with minor stringers of Limestone.

3703 - 3710            7            Siltstone, as above

3710 - 3750            40           Siltstone, dolomitic, dark gray to black, hard, brittle, poor fissility, calcareous, with: common mica.

3750 - 3785            35           Siltstone, as above, with stringers of Limestone, light gray, oolitic, rare fossil fragments, moderately soft, microcrystalline, silty.

Greenbriar Limestone (3785 - 4255)

3785 - 3855            70           Limestone, light to dark gray, oolitic, rare fossil fragments, hard, microcrystalline, locally silty, with: rare mica.

3855 - 3900	45	Limestone, medium and dark gray with common tan, oolitic in part (tan), common fossil fragments, hard, microcrystalline, part very argillaceous and fissile, with: rare chert and rare pyrite.
3900 - 3913	13	Limestone, as above, with stringers of Siltstone, carbonaceous, black, hard, poorly fissile.
3913 - 3944	31	Limestone, as in 3855 - 3900.
3944 - 3990	46	Limestone, white to olive and light tan, rare oolites, rare fossil fragments, hard, microcrystalline.
3990 - 4042	52	Limestone, silty, light grayish-brown to dark brown, common fossil fragments.
4042 - 4235	193	Limestone, locally silty, beige to tan with rare light gray, oolitic, common fossil fragments, microcrystalline.
4235 - 4255	20	Limestone, beige, light to dark gray, common fossil fragments, moderately soft, microcrystalline, with: common chert, and rare pyrite.

Maccrady formation (4255 - <sup>4</sup>312)

4255 - 4312	57	Siltstone, red, reddish-brown, and light to dark gray, hard, brittle, calcareous, with: common mica and rare pyrite.
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Price Siltstone (Sandstone) (4312 - 4471)

4312 - 4375	63	Siltstone, light to dark gray and black, moderately hard, brittle, locally finely sandy, locally slightly calcareous, with: common mica and common coaly carbonaceous material.
4375 - 4443	68	Siltstone, carbonaceous, black, with some dark brownish-gray, hard, brittle, argillaceous, with: common mica, and impure coaly matter.
4443 - 4471	28	Siltstone, light to dark gray and rare black, moderately soft, flakey, poor local fissility, with: common mica, and common coaly carbonaceous material.

Big Stone Gap Shale (4471 - ?)

4471 - 4504	33	Shale, silty, light to dark gray, very hard, brittle, poor fissility, locally calcareous, with: common mica, and common pyrite.
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4631 - 4660	29	Siltstone, clayey, medium to dark gray and black, hard, brittle, locally fissile, grades in places to a shale, locally slightly calcareous, with: rare mica, and abundant pyrite.
4660 - 4774	114	Shale, silty, carbonaceous, black, moderately soft, flakey, good fissility, locally slightly calcareous, with: common mica, and rare pyrite.
4774 - 4815	41	Siltstone, light to dark gray, brownish-gray, and black, hard, brittle, locally poorly fissile, argillaceous, with: common mica, and common coaly carbonaceous material.
4815 - 4836	21	Shale, silty, dark gray to black, hard, brittle, fair fissility, locally calcareous, with: rare mica, and common coaly carbonaceous material.
4836 - 4950	114	Siltstone, coaly carbonaceous, black, moderately soft, flakey, locally fissile, slightly calcareous, with: common pyrite, and common mica.
4950 - 4986	36	Interbedded; Shale, light to medium gray, moderately hard, brittle, good fissility, with: common mica; and, Siltstone, dark gray to black, moderately soft, flakey slightly calcareous, with: common mica, and rare pyrite.
4986 - 5075	89	Shale, carbonaceous, black, moderately hard, brittle, fair fissility, locally silty, argillaceous, with: rare mica, and scattered stringers of light gray siltstone.
5075 - 5190	115	Siltstone, light to dark gray, black, and brown, moderately hard, brittle, locally poor fissility, slightly calcareous, with: common coaly carbonaceous material, common mica, and common pyrite.
5190 - 5345	155	Interbedded; Shale, carbonaceous, black, hard, brittle, fair fissility, locally silty, with: common mica, and common pyrite; with, Siltstone, light to dark gray, moderately hard, brittle, with: common pyrite.
5345 - 5367	22	Interbedded; Shale and Siltstone, as above; with, Limestone, light gray to buff, moderately hard, fine-grained, microcrystalline, with: abundant chert.

SUMMARY

Pennsylvanian  
System  
(0' - 2904')

Pottsville Gr.  
(0' - 2904')

Wise Formation  
(0' - 1024')

Gladeville Sandstone  
(no pick)

Norton Formation  
(1024' - 2202')

Lee Formation  
(2202' - 2904')

Bluestone Formation  
(2904' - 3126')

Pennington Gr.  
(2904' - 3555')

Princeton Sandstone  
(absent)

Hinton Formation  
(3126' - 3555')

Mississippian  
System  
(2904' - )

Bluefield Formation  
(3555' - 3785')

Greenbriar Limestone  
(3785' - 4255')

Maccrady Formation  
(4255' - 4312')

Price Siltstone (Sandstone)  
(4312' - 4471')

Big Stone Gap Shale  
(4471 - ?)

Devonian Shales and Silts  
(? - T. D.)

Blair Coal Horizon  
(814')  
Lyons Coal Horizon  
(889')

Norton Coal (1024')

Lower Banner Coal Horizon  
(1392')

Raven Coal  
(1865')

Stoney Gap Sandstone  
member (3345' - 3555')

## GEOLOGIC SUMMARY

## Pennsylvanian System

Wise Formation	in bottom	surface 1000 (?)
Gladeville Sandstone	top bottom	1000 (?) 1024
Norton Formation	top bottom	1024 2202
Lee Formation	top bottom	2202 3017

## Mississippian System

Bluestone Formation	top bottom	3017 3060
Princeton Sandstone	top bottom	3060 3126
Hinton Formation	top bottom	3126 3555
Stony Gap Sandstone	top bottom	3345 3555
Bluefield Formation	top bottom	3555 3785
Greenbrier Limestone	top bottom	3785 4255
Maccrady— Price Formations	top bottom	4255 4471

## Mississippian— Devonian Systems

Big Stone Gap Shale	top bottom	4471 4774
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## Devonian— Pre-Devonian Systems

Devonian— Pre-Devonian undivided	top bottom	4774 (sampled depth 5367)
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