

Operator: United Fuel Gas Company
 Farm: National Shawmut Bank of Boston
 Well No.: 8415-T
 Location: Buchanan County
 6000' S of 37° 30'
 4550' W of 82° 00'

Geologic log
 Samples studied by R. J. Voigtsberger
 Virginia Division of Mineral Resources
 October, 1959'

Elevation: 1354' Ground
 Total Depth: 5567' (in Huntersville chert)
 Commenced: July 2, 1957
 Completed: November 11, 1957
 Result: Gas Well

Pottsville group - Thickness 1739+ Depth Interval 63' - 1802'

Depth		
63'-100'	37'	Sandstone, white to light gray, very coarse-grained, conglomeratic, with quartz, milky, clear, gray and brown smokey, rose, citrine, and green, and shale, light to medium gray, micaceous, with plant fossils and chlorite.
100'-107'	7'	Shale, medium gray-brown and sandstone, white, coarse-grained, conglomeratic.
107'-130'	23'	Shale, medium gray and brown.
130'-137'	7'	No sample.
137'-143'	6'	Sandstone, light gray, very fine-grained, micaceous, silty with coaly partings, and shale, medium gray, and coal.
143'-210'	67'	Shale, medium gray, silty in uppermost part of interval.
210'-225'	15'	Siltstone, medium gray
225'-254'	29'	Siltstone, light gray
254'-315'	61'	Sandstone, white, medium-grained, very micaceous, coaly partings with shale, dark gray and coal and a trace of shale, brown from 275' to 300' and from 310' to 315'.
315-336'	21'	Shale, medium gray with coaly partings
336'-342'	6'	Siltstone, light gray, micaceous, and shale, medium gray.
342'-356'	14'	Sandstone, light gray, fine-grained, very micaceous, and a trace of shale, medium gray.
356'-395'	39'	Sandstone, light gray, medium-grained, with green quartz and chlorite

395'-402'	7'	Shale, medium gray, and sandstone, light gray, coarse grained, micaceous
402'-412'	10'	Shale, dark gray and brown and a trace of sandstone, white, coarse-grained
412'-467'	55'	Siltstone, light gray, micaceous, and shale, dark gray
467'-472'	5'	Shale, medium to dark gray; coal; and sandstone, white, fine-grained, micaceous
472'-500'	28'	Sandstone, light gray, medium-grained, micaceous with coaly partings, and shale, medium gray
500'-551'	51'	Sandstone, light gray, medium to coarse-grained, with some shale, medium gray. No samples 519'-525'
551'-581'	30'	Shale, medium gray, slightly silty
581'-615'	34'	Sandstone, light gray, very fine-grained, and shale, medium gray, silty
615'-685'	70'	Sandstone, white, fine-grained, very clean and traces of shale, medium gray. Coaly partings at 639'-647'. Siltstone, medium gray, micaceous in lower 8' of interval.
685'-692'	7'	Sandstone, light to medium gray, fine-grained, very micaceous with some quartz, green and chlorite, and shale, medium gray.
692'-699'	7'	As above, but with coaly partings and some coarse-grained quartz.
699'-708'	9'	Sandstone, white, medium-grained, clean, conglomeratic
708'-784'	76'	Sandstone, white, fine-grained, with a trace of shale, medium gray, silty
784'-796'	12'	Sandstone, light gray, fine-grained coaly, micaceous, and conglomeratic with shale, brown and gray
796'-1117'	321'	No samples
1117'-1188'	71'	Sandstone, white, fine to coarse-grained, clean with some shale, medium gray. Conglomerate at 1117'-1122' and 1146'-1152'. No samples 1134'-1142' and 1184'-1188'

1188'-1197'	9'	Siltstone, light to medium gray, shale, medium gray, and sandstone, white, very fine-grained
1197'-1205'	8'	Shale, medium gray with coal.
1205'-1214'	9'	Siltstone, medium gray, micaceous
1214'-1237'	23'	Sandstone, very light gray, fine-grained, micaceous with green quartz and siltstone, medium gray in uppermost part of interval.
1237'-1244'	7'	Sandstone, white, fine to coarse-grained micaceous with green quartz and coal.
1244'-1254'	10'	Sandstone, as above, but conglomeratic and with coaly partings
1254'-1305'	51'	Sandstone, white, fine to coarse grained, micaceous with green quartz and a trace of shale, medium gray. Conglomeratic 1254' - 1270' and 1295'-1305'. Coaly partings at 1295'-1305'.
1305'-1331'	26'	Sandstone, light gray, fine-grained, conglomeratic 1305'-1315'. Coaly partings, and shale, medium gray, silty.
1331'-1339'	8'	Shale, black, coaly and sandy with pyrite and some sandstone, light gray, fine-grained.
1339'-1370'	31'	Sandstone, very light to medium gray, fine-grained, and some shale, medium gray. Black shale and coal at 1362'-1370'. Conglomerate and pyrite 1339'-1349'.
1370'-1400'	30'	Sandstone, as above, with siltstone, medium-gray. No samples 1397'-1400'.
1400'-1420'	20'	Shale, medium gray
1420'-1432'	12'	Shale, dark gray with coal and a trace of sandstone, light gray, fine-grained.
1432'-1450'	18'	Sandstone, light gray, fine-grained, and shale, medium to dark gray, brown, and with brown spherulitic inclusions and coal.

1450'-1490'	40'	Sandstone, white, fine-grained, clean, with abundant coal. Some shale, medium gray, 1450'-1480' and conglomerate 1463'-1490'.
1490'-1597'	107'	Sandstone, white, fine to coarse-grained, clean except for iron stain at 1497'-1507'. Conglomeratic 1490'-1530', 1550'-1570' and 1584'-1597. Shale, medium gray 1490'-1530'. Coal 1516'-1523'. No sample 1572'-1576.
1597'-1645'	48'	Sandstone, white, medium to very coarse-grained, conglomeratic. No conglomerate in lower 7' of interval.
1645'-1654'	9'	Sandstone, white, medium-grained, clean, conglomeratic, and sandstone, gray, medium-grained with green and black inclusions and shale, dark gray.
1654'-1664'	10'	Sandstone, light to medium gray, fine to medium-grained, micaceous, with dark inclusions and shale, medium gray.
1664'-1684'	20'	Shale, medium gray, silty and sandstone as above.
1684'-1699'	15'	Sandstone, white, fine-grained, clean, with a trace of shale, medium gray.
1699'-1722'	23'	Sandstone, as above, but conglomeratic
1722'-1736'	14'	Sandstone, white to tan-gray, fine-grained, very micaceous, with coaly partings.
1736'-1769'	33'	Sandstone, white, fine to coarse-grained, clean, conglomeratic
1769'-1776'	7'	Sandstone, white to tan-gray, fine to medium-grained with some shale, dark gray
1776'-1802'	26'	Sandstone as above, but conglomeratic
Bluestone formation - Top - 1802'		
1802'-1838'	36'	Shale, green-gray, and brown, <i>red</i>
1838'-1848'	10'	Shale, light to medium gray, and red-brown with shale, medium gray and tan
1848'-1859'	11'	Shale, medium gray, silty, calcareous
1859'-1902'	43'	Sandstone, light gray, very fine-grained, and shale, medium gray. Trace of shale, red in upper part of interval and ostracodes in lower part.

1902'-1906'	4'	Sandstone, very light gray, very fine-grained, iron stained, silty, with shale, medium gray
1906'-1935'	29'	Sandstone, very light gray to light green-gray, very fine-grained, micaceous, with shale, medium gray
1935'-1944'	9'	Sandstone, white to light gray, fine-grained, and siltstone, light gray with shale, medium gray and red.
1944'-1952'	8'	Siltstone, light to medium gray, and sandstone, white to light gray.
1952'-1975'	23'	Sandstone, white to medium gray, fine-grained, and siltstone, medium gray, and shale, medium gray and red.
1975'-2027'	52'	Shale, medium gray with a trace of sandstone, light gray, fine-grained in uppermost part of interval.
2027'-2080'	53'	Shale, medium gray, and sandstone, white to light gray, fine-grained with a trace of shale, gray-red-brown in upper part of interval and pyrite in lower portion of interval.
2080'-2126'	46'	Shale, medium to dark gray, and siltstone, medium gray with pyrite. Sandstone, light gray, very fine grained coming in at <u>2089'</u> . Coal at 2095'-2116.
2126'-2137'	11'	Sandstone, white, fine to medium-grained, with shale, gray, green-gray, red and pyrite and ostracodes.
2137'-2152'	15'	Sandstone, white, fine-grained, with shale, medium gray, red, green-gray, and red and green varigated.
2152'-2170'	18'	Sandstone, white, fine to medium-grained, conglomeratic with shale, medium gray and pyrite
2170'-2210'	40'	As above but with shale, red and green varigated
2210'-2215'	5'	No sample
2215'-2223'	8'	Sandstone, white, medium to coarse-grained, conglomeratic
* 2223'-2236'	13'	Shale, medium gray and red and varigated red and gray, <i>very calcareous and pyritic</i>
2236'-2240'	4'	Shale, red and gray
2240'-2315'	75'	Shale, red, green, and gray with sandstone, white to light gray, very fine-grained at 2294'-2299'

2315'-2344'	29'	Sandstone, light gray-green and medium gray, very fine-grained, and shale, medium gray, dark gray-red, and green-gray, dolomitic (?)
2344'-2447'	103'	Shale, medium gray and gray-green with increasing sandstone, light to medium gray, very fine-grained, Siltstone, medium gray in upper portion of interval and spotty occurrences of pyrite throughout interval.
2447'-2456'	9'	Shale, medium gray and red-brown, calcareous
2456'-2468'	12'	Shale, red
2468'-2475'	7'	Shale, red, and gray and some sandstone, white, fine-grained
2475'-2488'	13'	Shale, red, and gray, silty
2488'-2520'	32'	Shale, as above, and sandstone, light green-gray, fine-grained, micaceous
2520'-2533'	13'	Shale, medium gray, slightly calcareous, and shale, red
2533'-2543'	10'	Shale, medium gray, green-gray, and red, slightly calcareous
2543'-2561'	18'	Shale, medium-gray, and dark red-gray
2561'-2579'	18'	Siltstone, light to medium-gray, and shale medium gray, and red with pyrite and a trace of sandstone, white to light gray, very fine-grained in lower half of interval
2579'-2603'	24'	Sandstone, as above, with shale, medium gray and red. Pyrite and a trace of shale, green, silty in lower half of interval.
2603'-2610'	7'	Shale, dark gray, red, and gray-green, and sandstone, white, fine-grained
2610'-2617'	7'	Shale, dark gray
2617'-2652'	35'	Shale, red, and gray, slightly calcareous
2652'-2694'	42'	Shale, dark gray, and sandstone, white to light gray, very fine-grained with a trace of shale, red. Pyrite at top and bottom of interval.

2694'-2734'	40'	Shale, medium gray with brach fragments and calcareous in part at 2707'-2719'
2734'-2780'-	46'	Shale, medium gray, and some limestone, medium gray, very argillaceous, with fossil fragments. Pyrite at 2752'-2757' and crinoid stems, brach fragments and pyrite at base of interval
2780'-2810'	30'	Limestone, tan-gray, oolitic, argillaceous, and shale, medium gray
2810'-2817'	7'	Shale, medium gray, and limestone, dolomitic with chert, tan
2817'-2847'	30'	Shale, medium gray, calcareous, and limestone buff and tan-gray, argillaceous with crinoid stems and pyrite at top of interval
Greenbriar limestone - Top - 2847'		
2847'-2900'	53'	Limestone, tan-gray, argillaceous, and shale, medium gray with oolites in upper portion of interval and chert, tan in middle of interval
2900'-2910'	10'	Limestone, buff, very oolitic and limestone, tan-gray with a trace of shale, medium gray and pyrite
2910'-2924'	14'	As above, but without oolites and with crinoid stems
2924'-3087'	163'	Limestone, buff, oolitic throughout entire interval. Very oolitic and with crinoid plates and stems, ostracodes, pelecypods, and gastropod tests in uppermost part of interval and pyrite at 2994'-3003'.
3087'-3096'	9'	Limestone, tan, medium gray, green, and purple-gray, very argillaceous
3096'-3112'	16'	As above and with limestone, red-purple.
3112'-3138'	26'	Limestone, tan, slightly oolitic with a trace of shale, dark gray, and no oolites from 3120'-3138'.

3138'-3144' 6' Limestone, tan, slightly oolitic, argillaceous, and siltstone, red, brown-red, purple, medium gray, and green, calcareous

Maccrady shale - Top-3144'

3144'-3207' 63' Siltstone, red, and green-gray, very micaceous at 3168'-3178'

3207'-3245' 38' Shale, red, and gray, and variegated red and gray. Becoming silty at 3216'.

3245'-3266' 21' Siltstone, light to dark gray, and red

Price sandstone- Top - 3266'

3266'-3351' 85' Shale, medium to dark gray, and sandstone, light to medium gray, very fine-grained. Sand dominant in lower 30' of interval. Pyrite at 3319'- 3329'.

✓ Big Stone Gap shale - Top-3351'

3351'-3400' 49' Siltstone, light to medium gray

3400'-3785' 385' Shale, medium gray with pyrite at 3514'-3524'.

3785'-3795' 10' Shale, light to medium gray, silty

3795'-4750' 955' Shale, medium gray with pyrite in basal 10' of interval

4750'-4817' 67' Siltstone and shale, light to dark gray

4817'-4888' 71' Shale and siltstone, medium gray

4888'-4962' 74' Shale, medium to dark gray

4962'-5060' 98' Shale, very dark gray with pyrite at 4962'-4976', 4990'-5013', and 5042'-5060'.

5060'-5429' 369' Shale, medium gray with pyrite at 5087'-5100, 5131'-5158', 5267'-5292'.

5429'-5515' 86' Shale, very dark gray with pyrite at 5429'-5463', and 5482'-5498'. Coal at 5463'-5482'.

DEPTH		
5515'-5534'	19'	Shale, black, waxy
Huntersville chert - Top - 5534'		
5534'-5539'	5'	As above, but with chert, brown, black, and white, and pyrite. Some limestone, tan, dolomitic
5539'-5567'	28'	No samples
		T. D. 5567'

Summary

Pennsylvanian	in	62'
	bottom	1802'
Bluestone formation	top	1802'
	bottom	2088' ?
Princeton sandstone & Avis ls. undifferentiated	top	2088' ?
	bottom	2223' ?
Hinton formation (proper)	top	2223' ?
	bottom	2314' ?
Stony Gap sandstone member	top	2314' ?
	bottom	2448' ?
Bluefield formation	top	2448' ?
	bottom	2847'
Greenbrier limestone	top	2847'
	bottom	3143'
Maccrady shale	top	3143'
	bottom	3265'
Price sandstone	top	3265'
	bottom	3350'
Big Stone Gap shale & Devonian shale undifferentiated	top	3350'
	bottom	5534'
Huntersville chert	top	5534'
in Huntersville chert at :	T. D.	5567'

Operator: United Fuel Gas Company
 Farm: National Shawmut Bank of Boston
 Well No.: 8415-T

Samples for this well were examined by Mr. David Bowen in preparing a Master's thesis entitled "Subsurface Study of the Lee Formation in Buchanan County, Virginia," for the Virginia Polytechnic Institute. A microfilm copy of the thesis, containing a detailed description of the Post-Princeton strata in this well, is available for reference in the Library of the Virginia Division of Mineral Resources.

Formation boundaries stated in this thesis are as follows:

System

Formation

Pennsylvanian

Post-Lee Strata, Undivided	in	0'
	bottom	888'
Lee Formation	top	888'
	bottom	1802'

Mississippian

Bluestone Formation	top	1802'
	bottom	2104'
Princeton Sandstone	top	2104'
	bottom	--