

Operator: Clinchfield Coal Company	Geologic log
Farm: Big Sandy Fuel Corporation	Samples studied by R. J. Voigtsberger
Well No.: 213	Virginia Division of Mineral Resources
Location: Buchanan County	October, 1959
15,950' S of 37° 20'	
22,500' W of 82° 10'	
Elevation: 1620' Ground	
Total Depth: 5650' (in Devonian shale)	
Commenced: November 13, 1958	
Completed: April 29, 1959	
Result: Gas Well	

Pottsville group - Thickness 1860' (+) - Depth Interval 25' - 1885'

DEPTH		
25' - 75'	50'	Siltstone, light to medium gray, micaceous, with coal.
75' - 98'	23'	As above, but sandy and no coal.
98' - 105'	7'	Same as 25' - 75'.
105' - 121'	16'	Shale, medium gray with coal 112' - 121'.
121' - 140'	19'	Sandstone, light to medium gray, very fine-grained, quartzose, micaceous and chloritic, clay and silica cement, and shale, medium gray.
140' - 150'	10'	Same as above, but sandstone fine-grained and with coal.
150' - 178'	28'	As above, but no coal and sandstone fine to medium-grained.
178' - 200'	22'	Shale, dark gray, silty.
200' - 230'	30'	Shale, medium gray, and siltstone, light gray, sandy.
230' - 241'	11'	Shale, brown, coaly, and sandstone, light gray, fine-grained, and coal.
241' - 313'	72'	Sandstone, light gray, fine to medium-grained, quartzose, micaceous, and chloritic, clay and silica cement with shale medium gray.
313' - 341'	28'	Shale, medium gray with some shale, brown at top of interval and shale, medium to dark gray with sandstone, light gray, fine-grained, micaceous, chloritic at base of interval.

DEPTH		
341' - 380'	39'	Sandstone, light to medium gray, fine-grained, quartzose, micaceous with coaly partings and clay and silica cement. A trace of shale medium gray from 360' - 380'.
380' - 416'	36'	Siltstone, medium gray, sandy.
416' - 501'	85'	Shale, medium gray, silty at 431' - 450'.
501' - 552'	51'	Sandstone, light gray, fine-grained, quartzose, micaceous, clay and silica cement with shale, medium to dark gray.
552' - 560'	8'	Sandstone, white to light gray, medium grained, quartzose, very micaceous, clay and silica cement and siltstone, medium gray, micaceous.
560' - 600'	40'	Sandstone, white, medium-grained, quartzose, micaceous, chloritic, clay and silica cement, with quartz, green, and shale, medium gray.
600' - 664'	64'	Sandstone, white, fine-grained, quartzose micaceous and some chlorite, silica cement, and shale, medium gray.
664' - 713'	49'	Sandstone, white, fine to medium-grained, quartzose, clean, frosted grains, silica cement.
713' - 729'	16'	Sandstone, white, fine to medium-grained quartzose, clean, conglomeratic, silica cement, and shale, dark gray.
729' - 791'	62'	Shale, medium gray, micaceous.
791' - 862'	71'	Sandstone, light gray, very fine to fine-grained, quartzose, micaceous, and chloritic, clay cement, and siltstone, medium gray, micaceous, and shale, medium gray.
862' - 888'	26'	Siltstone, light to medium gray, micaceous, and shale, medium gray.
888' - 930'	42'	Shale, medium gray, silty in upper part of interval.
930' - 943'	13'	Sandstone, white to tan-gray, very fine-grained, quartzose, silica and clay cement, and shale, medium gray.
943' - 957'	14'	Shale, dark gray and dark brown, silty.
957' - 961'	4'	No sample.

DEPTH		
961' - 1049'	78'	Shale, same as 943' - 957', but with some sandstone, light gray-brown, very fine-grained, quartzose, silica and clay cement.
1049' - 1145'	96'	Sandstone, white, fine-grained, quartzose, silica cement, conglomeratic, with shale, medium gray.
1145' - 1190'	45'	As above but sandstone is fine to medium-grained and shale decreased.
1190' - 1255'	65'	Sandstone, light gray, very fine-grained, micaceous, clay and silica cement, and siltstone, medium gray, micaceous. Conglomerate at 1213' - 1220'.
1255' - 1295'	40'	Sandstone, light gray, fine to medium-grained, very micaceous, clay and silica cement, and a trace of shale, medium gray. Coal occurs through interval except 1281' - 1285' where only coaly partings occur.
1295' - 1305'	10'	X Sandstone, white, fine to medium-grained, conglomeratic, silica cement, and sandstone, tan-gray and green-gray, fine to medium-grained, very micaceous, clay and silica cement, and a trace of shale, dark gray.
1305' - 1330'	25'	X Sandstone, white, fine to coarse-grained, conglomerate at top and bottom of interval, silty silica cement.
1330' - 1350'	20'	X Sandstone, white to light gray, fine to medium-grained, conglomeratic, clay and silica cement, and a trace of shale, black.
1350' - 1450'	100'	X Sandstone, white, fine to medium-grained, conglomeratic, silica cement. Coal and a trace of shale, black at 1414' - 1420' and considerable shale, medium gray in basal 5' of interval.
1450' - 1460'	10'	X Sandstone, white, very fine-grained, conglomeratic, clay and silica cement, and shale, medium gray.
1460' - 1477'	17'	X Sandstone, light gray, very fine-grained, shaly partings, silica cement, and shale, medium to dark gray.
1477' - 1515'	38'	Shale, medium gray to black, and coal at 1495' - 1515'.
1515' - 1626'	111'	Shale, medium gray.

DEPTH		
1626' - 1712'	86'	Sandstone, light gray to tan-gray, fine-grained, micaceous, clay cement, and shale, medium gray, silty.
1712' - 1759'	47'	Sandstone, white, fine-grained, conglomeratic from 1719' to base of interval, silica cement, and shale, medium gray, very micaceous.
1759' - 1818'	59'	Sandstone, light gray, fine to medium-grained, conglomeratic, clay and silica cement, and shale, medium gray, silty.
1818' - 1865'	47'	Shale, medium gray with a trace of sandstone, light gray, fine-grained, silica cement at top 7' of interval.
1865' - 1885'	20'	Shale, medium gray, and red-brown.
Bluestone formation - Top - 1885'		
1885' - 1895'	10'	Shale, red, green, and gray.
1895' - 1945'	50'	Shale, medium gray to black, red, and green, and varigated red and green, calcareous in part.
1945' - 2065'	120'	Shale, red, and increasing amounts of shale, medium gray coming at 1964'. No samples 2030' - 2036'.
2065' - 2095'	30'	Sandstone, green, very fine-grained, silty, slightly calcareous, clay cement, and shale, gray, slightly calcareous, and shale, red.
2095' - 2185'	90'	Shale, medium gray.
2185' - 2198'	13'	Shale, dark gray.
2198' - 2251'	53'	Shale, medium gray with a trace of shale, red in basal 11' of interval.
Princeton sandstone - Top - 2251'		
2251' - 2268'	17'	Shale, medium gray, and red with some sandstone, white, very fine-grained, clay cement, and pyrite at top of interval.
2268' - 2360'	92'	Sandstone, white, fine-grained, silica cement, and shale, medium gray. A trace of shale, red from 2268' - 2305'. Pyrite at top of interval and at 2322' - 2325'. A trace of coal at 2318' - 2322'.

DEPTH		
2360' - 2418'	58'	Sandstone, white, fine-grained, slightly conglomeratic, silica cement, and shale medium gray.
Avis limestone - Top - 2418'		
2418' - 2425'	7'	Limestone, gray-brown, very argillaceous, and shale, medium gray.
2425' - 2432'	7'	Shale, medium gray, and red, and limestone as above.
Hinton formation (proper) - Top - 2432'		
2432' - 2463'	31'	Shale, red, and medium gray.
2463' - 2465'	2'	Shale, red, and gray, and sandstone, light gray, very fine-grained, micaceous, clay cement.
2465' - 2487'	22'	Shale, red, and gray with pyrite.
2487' - 2524'	37'	Sandstone, light gray, and light green-gray, silty, and shale, medium gray, and red. Gray shale slightly calcareous.
2524' - 2549'	25'	Shale, light to medium gray, and red, and limestone, gray-brown, very argillaceous with pyrite.
2549' - 2578'	29'	Sandstone, light tan-gray, very fine-grained, clay cement, and shale medium gray. Pyrite and limestone, gray-brown, very argillaceous at top of interval.
2578' - 2620'	42'	Shale, medium gray, silty with some shale, red, silty from 2605' - 2620'.
2620' - 2667'	47'	Shale, medium to dark gray, and some sandstone, light gray, very fine-grained, micaceous, clay cement, and pyrite.
2667' - 2711'	44'	Shale, medium to dark gray, red, and green-brown, calcareous with pyrite at top of interval.
2711' - 2724'	13'	Shale, red, green, and gray, all calcareous.
2724' - 2760'	36'	Siltstone, light gray, micaceous, sandy, and shale, red, gray, and green, silty.
2760' - 2805'	45'	Shale, dark gray, and red, calcareous, and siltstone, light gray, sandy, micaceous.

DEPTH			
2805' - 2835'	30'		Shale, medium to dark gray, green, red, calcareous with some sandstone, light gray, very fine-grained, silty, micaceous, clay cement in lower 13' of interval.
2835' - 2865'	30'		Shale, dark gray, calcareous in part with macro fossil fragments, and a trace of shale, red at base of interval.
2865' - 2892'	27'		Shale, as above, but with limestone, tan-gray, very argillaceous.
2892' - 2902'	10'		Shale, medium gray, and red, and sandstone, dirty white, very fine-grained, silica cement.
2902' - 2960'	58'		As above, but no shale, red. Sandstone becoming very micaceous toward base of interval.
2960' - 3005'	45'		Shale, gray, and sandstone, light gray, very fine-grained, silty with coaly partings, silt and silica cement.
3005' - 3017'	12'		Shale, medium gray.
3017' - 3173'	56'		Shale, as above, and with limestone, tan-gray, argillaceous. Somewhat oolitic at 3045' - 3053'. Fossil fragments at 3084' - 3095'. Oolitic and with crinoid stems and other fossil fragments at 3117' - 3127'.
Greenbriar limestone - Top - 3173'			
3173' - 3438'	255'		Limestone, buff to tan-gray with a high concentration of oolites at top and base of interval and some oolites scattered throughout most of interval. Trace of pyrite at top of interval.
3438' - 3500'	62'		Limestone, buff to tan-gray. Coal was noted in the interval 3438' - 3449', but apparently is contamination. A trace of chert, tan and red at 3468' - 3476'.
3500' - 3504'	4'		Siltstone, purple-red, and limestone, tan-gray with a trace of coal.
Maccrady shale - Top - 3504'			
3504' - 3528'	24'		Shale, red, and gray, slightly silty.
3528' - 3550	22'		Shale, medium gray, slightly silty.

Price sandstone - Top - 3550'

DEPTH		
3550' - 3678'	128'	Sandstone, light gray, very fine-grained, silty, micaceous, clay cement, and shale, dark gray. A trace of shale, red from 3550' - 3579'. Pyrite sparsely distributed in middle and basal portions of interval.
Big Stone Gap shale - Top - 3692'		
3678' - 3820'	142'	Shale, medium gray with some sandstone, as above, at top of interval. Pyrite occurring at 3747' - 3775' and 3790' - 3805'.
3820' - 3915'	95'	Shale, medium gray with a small amount of shale, brown. Pyrite occurring at 3820' - 3835' and 3895' - 3900'.
3915' - 4100'	185'	Shale, dark gray with a small amount of shale, brown occurring at 3915' - 3965'.
4100' - 4170'	70'	Sandstone, light gray, very fine-grained, silty, micaceous, clay and silica cement, and shale, medium to dark gray.
4170' - 4200'	30'	Siltstone, light to medium gray, becoming darker toward bottom portion of interval.
4200' - 4240'	40'	Shale, black, micaceous with pyrite occurring in upper portion of interval.
4240' - 5090'	850'	Shale, light to medium gray with a trace of coal at 4240' - 4255', and 4290' - 4302'. Becoming micaceous at 4628'. Pyrite occurring at 4867' - 4886', crystalline and spherulitic pyrite at 4935' - 4956', crystalline pyrite at 4990' - 5010', and 5028' - 5070'. No samples for the intervals 4638' - 4689', 4904' - 4935', and 5070' - 5090'.
5090' - 5190'	100'	Shale, dark gray to black with pyrite occurring throughout entire section with exception of top 20'.
5190' - 5290'	100'	Shale, medium to dark gray. No samples for the interval 5237' - 5257'. Pyrite distributed throughout entire interval except for missing section and 5270' - 5283'.
5290' - 5446'	156'	Shale, light to medium gray with a trace of coal occurring between 5304' and 5323'. Pyrite at 5304' - 5323', 5400' - 5413', and 5433' - 5446'.

DEPTH		
5446' - 5469'	23'	Shale, medium to dark gray, very pyritic and some coaly shale.
5469' - 5650'	181'	Shale, as above, but waxy in part. Pyrite occurring at 5469' - 5482', 5494' - 5530', and 5596' - 5650'. T. D. 5650'

Summary

Pennsylvanian	in bottom	25' 1885'
Bluestone formation	top bottom	1885' 2251'
Princeton sandstone	top bottom	2251' 2418'
Avis limestone	top bottom	2418' 2432'
Hinton formation (proper) & Stony Gap sandstone member undifferentiated	top bottom	2432' 2668' ?
Bluefield formation	top bottom	2668' ? 3172'
Greenbrier limestone	top bottom	3172' 3505'
Maccrady shale	top bottom	3505' 3550'
Price sandstone	top bottom	3550' 3692'
Big Stone Gap shale & Devonian shale undifferentiated in Devonian shale at	top T. D.	3692' 5650'