

Operator: United Fuel Gas Co.
 Farm: Zach Justice
 Well No.: 8848
 Location: Buchanan County
 11,150' S of 37°30')
 12,250' E of 82°05') Approximate
 Elevation: 1099.40' Ground
 Total Depth: 4815'
 Drilling Commenced: August 24, 1960
 Well Completed: Abandoned March 1961
 Result: Dry hole, P & A
 Geologic summary and correlations by: Marshall S. Miller

Buchanan Well No. 28
 Drillers log (0 - 4815)
 Gamma Ray log (0 - 1904)
 Sample log (2031 - 3009)

*Correlations to 2031' done by gamma ray log, supplemented by drillers log.

Pennsylvanian System

top	surface
bottom	1525

Mississippian System

Thickness

top	1525	
bottom	3457?	1932'

Bluestone Formation

top	1525	287'
bottom	1812	

Red Member

top	1525	65'
bottom	1590	

Glady Fork SS Member

top	1590	40'
bottom	1630	

Gray Member

top	1630	183'
bottom	1813	

<u>Princeton Formation</u>		Thickness
top	1813	82'
bottom	1895	

<u>Hinton Formation</u>		
top	1895	186'
bottom	2081	

<u>Little Stone Gap Member</u>		
top	?	cannot be concluded because of
bottom	?	the absence of well samples

<u>Red Member</u> ?		
top	?	cannot be determined, no samples and no gamma ray log
bottom	2065	

2031 - 2065 Red, and gray siltstone locally shaly and calcareous. No bedding, poorly fissile, common muscovite and biotite, and some carbonaceous material.

<u>Stony Gap Sandstone</u>		Thickness
top	2065	16'
bottom	2081	

2065 - 2081 Interval is characteristic of Stony Gap Sandstone. Sandstone is white, clear, well cemented, fine grained, well sorted, subrounded to angular, nonporous, contains small amounts of biotite and muscovite, considerable amount of carbonaceous material and stingers of argillaceous and ferruginous siltstone.

*The sequence of samples below contain local amounts of similar Stony Gap lithology. However, the overall general lithology assumes a shaly calcareous nature that is typical of the Bluefield Formation. Also, since the Bluefield Formation is known to contain sandstone of similar Stony Gap lithology, the continuous characteristic interval (2065 - 2081) is logged as Stony Gap sandstone and the interval below classified as Bluefield.

Bluefield Formation

top	2081	360'
bottom	2441	

2081 - 2441 Interval is chiefly gray and red siltstone of a shaly, calcareous nature. Siltstone is sometimes variegated (2081 - 2119) poorly fissile, moderately hard and brittle and contains biotite, muscovite, pyrite and carbonaceous material in varying amounts. Siltstone varies locally from a sandy siltstone to a shaly calcareous siltstone. Sandstone which might be termed lower Maxon sandstone is recognized in the intervals (2174 - 2185) and (2330 - 2350). The sandstone is white to clear to dark gray and is usually fine grained, fairly well sorted and is interstitially silty. Biotite, muscovite and pyrite are common accessory minerals. The sandstone is obviously interbedded with gray siltstone, which makes up 30% to 60% of the well cuttings. A soft, flaky, poorly fissile siltstone is found above and below these sandy intervals.

Greenbrier Formation

Thickness

top	2441	385'
bottom	2826	

2441 - 2826 A shaly limestone, dark gray to light brown, with fragments of fossils is typical of the upper 100' (2441 - 2550). The limestone progresses downward to a gray, drak gray, and brown, hard, cryto-crystal line limestone, locally oolitic and cherty.

Maccrady Formation

top	2826	114'
bottom	2940	

Red, moderately hard, brittle siltstone, no apparent bedding with muscovite and biotite.

Price Formation

top	2940	
bottom	? no samples past 3009'	

2940 - 3009 Fine grained silty sandstone, light gray, moderately cemented, very fine grained and well sorted, subrounded to subangular. Rare biotite, common muscovite.

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 Farm: Zach Justice et. al.
 Well No.: 8848
 Elevation: 1099.40'
 Total Depth: 4815'
 Location: Buchanan County
 11,150' S. of 37°30'
 11,750' W. of 82°00'
 Drilling Commenced: 8/24/60
 Well Completed: 3/61
 Result: Dry hole

Geologic log
 Samples studied and
 described by:
 John M. Wilson
 Virginia Division of
 Mineral Resources
 June, 1963

GEOLOGIC LOG

Depth	Thickness	Description
0-2031	2031	No samples.
2031-2050	19	Siltstone, locally finely sandy, locally shaly, medium to dark gray, moderately soft, flaky, no apparent bedding to poorly fissile, siliceous, argillaceous, with: rare biotite, common muscovite, rare carbonaceous material, and rare iron oxide stains, with; stringers of Sandstone, white to light gray, moderately cemented, very fine to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: rare muscovite, rare iron oxide stains. Nonporous.
2050-2065	15	Siltstone, locally shaly, dark gray, red, moderately hard, brittle, poorly fissile, argillaceous, ferruginous, with: common biotite, abundant muscovite, rare iron oxide stains, and common granule-sized milky white quartz.
2065-2081	16	Sandstone, white, clear, well cemented, very fine to fine-grained, well sorted, subrounded to angular, interstitially silty, siliceous, with: rare biotite, rare muscovite, common carbonaceous material, and common iron oxide stains. Nonporous to slightly porous; with stringers of Siltstone, medium to dark gray, red, green, moderately hard, brittle, no apparent bedding to poorly fissile, argillaceous, ferruginous, with: rare biotite, abundant muscovite and rare iron oxide stains.
2081-2119	38	Siltstone, variegated, locally shaly, light to dark gray, red, green, tan, moderately hard, brittle, no apparent bedding to poorly fissile, calcareous (slightly), argillaceous, with: rare biotite, rare muscovite, rare pyrite, rare carbonaceous material, and rare iron oxide stains.

- 2119-2128 9 Siltstone, locally finely sandy, locally shaly, light to dark gray, moderately hard, brittle, no apparent bedding to poorly fissile, siliceous, argillaceous, with: rare biotite, common muscovite, common carbonaceous material, and rare iron oxide stains.
- 2128-2174 46 Siltstone, locally shaly, light to medium gray, red, moderately hard, brittle, no apparent bedding to poorly fissile, argillaceous, ferruginous, with: common biotite, common muscovite, rare pyrite, and rare carbonaceous material.
- 2174-2185 11 Interbedded; Siltstone, as in 2128-2174, with; Sandstone, white to clear, moderately cemented, very fine to medium-grained, medium sorted, subrounded, to angular, siliceous, with: rare biotite, rare muscovite, rare pyrite, rare carbonaceous material, and common iron oxide stains. Slightly porous.
- 2185-2227 42 Siltstone, micaceous, locally finely sandy, locally shaly, medium to dark gray, red, moderately hard, brittle, no apparent bedding to poorly fissile, siliceous, argillaceous, ferruginous, with: abundant biotite, abundant muscovite, rare carbonaceous material, and rare iron oxide stains.
- 2227-2243 16 Shale, locally silty, red (common) green-gray, moderately hard, brittle, fair fissility to good fissility, argillaceous, with: common biotite, common muscovite, common pyrite, and rare carbonaceous material.
- 2243-2276 33 Siltstone, locally shaly, medium to dark gray, green-gray, moderately hard, brittle, no apparent bedding to poorly fissile, argillaceous, with: rare biotite, rare muscovite, and common carbonaceous material.
- 2276-2288 12 Limestone, shaly, light to dark gray, light to dark brown, moderately hard, fossil fragmental, no apparent bedding, cryptocrystalline to microcrystalline, with: common calcite.
- 2288-2318 30 Siltstone, light to dark gray, red (common), green (common), moderately soft, flaky, no apparent bedding, to poorly fissile, argillaceous, with: common biotite, common muscovite, and rare carbonaceous material.
- 2318-2330 12 Siltstone, locally finely sandy, locally shaly, light to dark gray, red (rare), green (rare), tan, moderately hard, brittle, no apparent bedding to poorly fissile, calcareous (slightly), argillaceous, with: common biotite, common muscovite, rare pyrite, common carbonaceous material and rare iron oxide stains.
- 2330-2343 13 Siltstone, grades locally to a very fine-grained sandstone, locally finely sandy, locally shaly, light to dark gray, moderately hard, brittle, no apparent bedding to poorly fissile, siliceous, argillaceous, with: common biotite, common muscovite, common pyrite, and abundant carbonaceous material.

2343-2373	30	Siltstone, as in 2330-2343, with stringers of; Sandstone, white to clear, poorly cemented, very fine to medium-grained, medium sorted, subrounded to subangular, interstitially silty, siliceous, with: common biotite, common muscovite, rare carbonaceous material, and rare iron oxide stains. Nonporous to slightly porous.
2373-2412	39	Siltstone, locally finely sandy, locally shaly, light to dark gray, red, green, moderately hard, brittle, no apparent bedding to poorly fissile, calcareous (slightly), siliceous, argillaceous, with: common biotite, common muscovite, and common carbonaceous material.
2412-2441	29	Siltstone, as in 2373-2412, calcareous.
2441-2469	28	Limestone, shaly, light to dark gray, light brown, moderately hard, fossil fragmental, no apparent bedding, cryptocrystalline to microcrystalline, with: rare mica, rare calcite, and rare carbonaceous material.
2469-2550	81	Interbedded; Limestone, as in 2441-2469, with; Shale, medium to dark gray, moderately soft, flaky, fair to good fissility, calcareous, argillaceous, with: rare muscovite.
2550-2568	18	Limestone, light to dark gray, light to dark brown, white, moderately hard, fossil fragmental, no apparent bedding, cryptocrystalline to microcrystalline, with: abundant calcite and rare carbonaceous material.
2568-2569	1	No samples.
2569-2579	10	Limestone, as in 2550-2568.
2579-2594	15	Limestone, silty, light to dark gray, white, moderately hard, fossil fragmental, rare, no apparent bedding, microcrystalline, with: abundant calcite.
2594-2642	48	Limestone, light gray, dark gray (rare), moderately hard, oolitic (locally), no apparent fossil content, no apparent bedding, cryptocrystalline, with: common calcite and rare iron oxide staining.
2642-2700	58	Limestone, dark gray, light to dark brown, moderately hard, oolitic (locally), no apparent fossil content, no apparent bedding, cryptocrystalline to microcrystalline, with: common calcite.
2700-2799	99	Limestone, light gray, light brown, white, moderately hard, fossil fragmental, rare, no apparent bedding, cryptocrystalline, with: common calcite and rare iron oxide staining.

2799-2826	27	Limestone, light brown, white, moderately hard, no apparent fossil content, no apparent bedding, microcrystalline, with: rare chert, common calcite.
2826-2909	83	Siltstone, locally finely sandy, red, moderately hard, brittle, no apparent bedding, ferruginous, with: common biotite, abundant muscovite, and rare carbonaceous material.
2909-2926	17	Siltstone, red, black, moderately hard, brittle, no apparent bedding, argillaceous, ferruginous, with: common biotite, common muscovite, and rare carbonaceous material.
2926-2940	14	Siltstone, dark gray, red (rare), black, moderately hard, brittle, no apparent bedding, argillaceous, with: rare biotite, common muscovite, and rare carbonaceous material.
2940-3000	60	Siltstone, grades locally to a very fine-grained Sandstone, locally finely sandy, locally shaly, light to dark gray, moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: common biotite, common muscovite, and common carbonaceous material.
3000-3009	9	Sandstone, silty, light gray, moderately cemented, very fine to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: rare biotite, common muscovite, common carbonaceous material common iron oxide stains. Nonporous to slightly porous.
3009-4815	1806	No samples.
4815'	Total Depth	

GEOLOGIC SUMMARY

Mississippian System

Hinton Formation	in	2031	
	bottom	2227	
Stony Gap Sandstone	top	2065	
	bottom	2227	
Bluefield Formation	top	2227	
	bottom	2441	
Greenbrier Limestone	top	2441	
	bottom	2826	
Maccrady Formation	top	2826	
	in	3009	(deepest sample)