Company: United Fuel Gas Co. Farm: National Showmut Bk. of Boston Well No.: 8870 Elevation: 1725.53 Total Depth: 5444' Location: Buchanan Co. 3650' S. of 37°30' 7600' W. of 82°00' Drilling Commenced: 9/28/59 Well Completed: 8/25/60 Result: Gas Well

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VDMR Well No. 444

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

## GEOLOGIC LOG

Depth	Thickness	Description
0-2420	2420	No samples
2420-2433	13	Interbedded, Sandstone, white to light gray, moderately cemented, very fine to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: common biotite, common muscovite, and common carbonaceous material. Nonporous to slightly porous. Siltstone, locally shaly, medium to dark gray, moderately soft, flaky, no apparent bedding to poorly fissile, argillaceous, with: common muscovite and rare carbonaceous material.
2433-2450	17	No samples
2450-2458	8	Sandstone, white to clear, moderately cemented, very fine to medium-grained, medium sorted, subrounded to angular, interstitially silty, siliceous, with: rare biotite, rare muscovite, common carbonaceous material, abundant iron oxide stains, and abundant silty-micaceous partings (contamination?). Nonporous to slightly porous.
2458-2475	17	Siltstone, grades locally to a very fine-grained sandstone, light to medium gray, moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: common biotite, abundant muscovite, rare carbonaceous material, and rare iron oxide stains.

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2475-2503	28		Sandstone, white, to clear, well cemented, very fine to fine-grained, well sorted, subrounded to sub- angular, interstitially silty, siliceous, with: rare biotite, rare muscovite, rare carbonaceous material, and iron oxide stains. Nonporous to slightly porous. Minor stringers of Siltstone, as in 2458-2475.
2503-2520	17		Sandstone, as in 2475-2503.
2520-2530	10		Conglomeratic sandstone, white to clear, milky white, moderately cemented, medium to very coarse grained, with common granule, poorly sorted, subrounded to angular, siliceous, with: rare biotite, rare muscovite and rare chlorite, common carbonaceous material, and common iron oxide stains. Nonporous to slightly porous.
2530-2566	36		Sandstone, white, clear, moderately cemented, medium to very coarse-grained, medium sorted, subrounded to subangular, interstitially silty, siliceous, with: rare biotite, rare muscovite, rare carbonaceous material and common iron oxide stains. Nonporous to slightly porous.
2566-2576	10		Interbedded; Siltstone, locally shaly, medium to dark gray, red, moderately hard, brittle, poorly fissile, argillaceous, ferruginous, with: rare biotite, rare muscovite, and rare carbonaceous material, and with; Limestone, light gray-green, moderately hard, no apparent fossil content, no apparent bedding to platy, cryptocrystalline, with: rare calcite and rare carbonaceous material.
2576-2583	7		Siltstone, locally finely sandy, dark gray (rare), red (common), green, moderately hard, brittle, no apparent bedding to poorly fissile, siliceous, argillaceous, with: Abundant biotite, common muscovite, common carbonaceous material and rare iron oxide stains.
2583-2610	27		Siltstone, locally shaly, light to dark gray, red, green, moderately soft, flaky, no apparent bedding to poorly fissile, argillaceous, ferruginous, with: common biotite, common muscovite, and rare carbona- ceous material.
2610-2622	12		Siltstone grades locally to a very fine-grained sandstone, locally finely sandy, light to dark gray, red, moderately hard, brittle, no apparent bedding, argillaceous, ferruginous, with: abundant biotite, abundant muscovite, and rare carbonaceous material.
2622-2632	10		Sandstone, white to clear, moderately cemented, very fine to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: common biotite, common muscovite, abundant carbona- ceous material, abundant iron oxide stains, and abundant silty-micaceous partings. Nonporous to slightly porous.

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2632-2646	14		Siltstone, l to dark gray bedding to p with: rare m and abundant	ocally finely sandy, locally shaly, light , moderately hard, brittle, no apparent boorly fissile, siliceous, argillaceous, huscovite, common carbonaceous material, iron oxide stains.
2646-2658	12		Siltstone, l brown, moder argillaceous material, an	ocally shaly, light to medium gray, light ately hard, brittle, poorly fissile, , with rare muscovite, common carbonaceous nd common iron oxide stains.
2658-2900	242 - 5		No samples	!
2900-2933	33		Sandstone, W fine-grained interstitial muscovite, r material, an to slightly locally shal moderately h with rare mu	white to clear, moderately cemented, very well sorted, subrounded to subangular, ly silty, siliceous, with: rare are chlorite (?), rare carbonaceous ad abundant iron oxide stains. Nonporous porous. With stringers of Siltstone, 1 y, medium gray to dark gray, red (common), ard, brittle, poorly fissile, argillaceous scovite.
2933-2941	8		Sandstone, a Siltstone, a	s in 2900-2933, with minor stringers of s in 2900-2933.
2941-2965	24		Siltstone, 1 moderately h with: common	ocally shaly, light to dark gray, ard, brittle, poorly fissile, argillaceous muscovite, and iron oxide stains.
2965-2990	25		Siltstone, a	s in 2941-2965, locally finely sandy.
2990-3005	15		Sandstone, w to fine-grai interstitial common musco iron oxide s with stringe	hite to clear, well cemented, very fine ned, well sorted, subrounded to subangular ly silty, siliceous, with: common biotite, vite, rare carbonaceous material, common tains. Nonporous to slightly porous; rs of Siltstone, as in 2965-2990.
3005-3063	58		Siltstone, l to dark gray bedding to p siliceous, a muscovite, r	ocally finely sandy, locally shaly, light , moderately hard, brittle, no apparent oorly fissile, calcareous (slightly), rgillaceous, with rare biotite, common are pyrite, and carbonaceous material.
3063-3123	60		Limestone, d hard, fossil microcrystal rare carbona	ark gray, light to dark brown, moderately fragmental, no apparent bedding, line, with:rare mica, common calcite, and ceous material.
3123-3146	23		Limestone, l oòlitic (loc bedding, cry pyrite, abun material.	ight to dark brown, moderately hard, ally), fossil fragmental, no apparent ptocrystalline, with: rare mica, rare dant calcite, and rare carbonaceous

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3146-3185	39	- · · ·	Limestone, lig moderately har bedding, cryp1 common calcite	ght to dark gray, light to dark brown, rd,fossil fragmental, common, no apparent tocrystalline to microcrystalline, with: e and common carbonaceous material.
3185-3215	30		Limestone, lig oolitic (local apparent beddi calcite, rare oxide staining	ght brown, tan, white, moderately soft, lly), fossil fragmental, rare, no ing, cryptocrystalline, with: abundant carbonaceous material and rare iron g.
3215-3235	20		Limestone, lig hard, oolitic bedding, crypt common calcite	ght gray, light to dark brown, moderately (locally), fossil fragmental, no apparent tocrystalline to microcrystalline, with: e.
3235-3305	70		Limestone, lig oolitic, fossi cryptocrystall carbonaceous m	ght brown, white, moderately hard, ils (crinoids), no apparent bedding, line, with: abundant calcite, rare material, and common iron oxide staining.
3305-3310	5		No samples.	
3310-3358	48		Limestone, lig hard, oolitic, bedding, micro rare carbonace	ght to dark brown, white, moderately , no apparent fossil content, no apparent pcrystalline, with: abundant calcite and eous material.
3358-3365	7		No samples.	
3365 <b>-3</b> 396	31.		Limestone, lig apparent fossi cryptocrystall iron oxide sta	ght gray, white, moderately hard, no il content, no apparent bedding, line, with: rare calcite and common aining.
3396-3410	14		Limestone, lig hard, fossil f cryptocrystall iron oxide sta	t to dark brown, white, moderately fragmental, rare, no apparent bedding, ine, with: common calcite and rare aining.
3410-3424	14		Interbedded; L Siltstone, red no apparent be argillaceous, abundant calci	imestone, as in 3396-3410, with; d, green-gray, moderately hard, brittle, edding to poorly fissile, calcareous, ferruginous with: rare muscovite, te, and rare iron oxide stains.
3424-3436	12		Siltstone, as	in 3410-3424.
3436-3478	42	• • •	Limestone, dol hard, no appar cryptocrystall rare carbonace staining.	omitic, light gray, tan, moderately ent fossil content, no apparent bedding, ine, with: common chert, rare calcite, ous material, and rare iron oxide
3478-3500	22		Siltstone, loc hard, brittle, argillaceous, common muscovi	ally shaly, light gray, red, moderately no apparent bedding to poorly fissile, ferruginous, with common biotite, te, and common carbonaceous material.

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	3500-3510	10		Siltstone, red, moderately soft, flaky, no apparent bedding, ferruginous, with rare muscovite, and rare iron oxide stains.
	3510 <b>-3</b> 512	· 2		No samples.
	3512-3537	25		Siltstone, as in 3500-3510.
	3537-3575	38		Siltstone, light to medium gray, red, moderately hard, brittle, no apparent bedding, argillaceous, ferruginous, with: common muscovite, rare carbonaceous material, and rare iron oxide stains.
	3575-3650	75		Siltstone, grades locally to a very fine-grained Sandstone, locally finely sandy, light to medium gray, moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: common biotite, common muscovite, rare carbonaceous material, and rare iron oxide stains.
	3650-3688	38		Sandstone, silty, light gray, moderately cemented, very fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: common biotite, common muscovite, rare carbonaceous material, and rare iron oxide stains. Nonporous to slightly porous.
	3688-3720	32	-	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 muscovite, common carbonaceous material and rare iron oxide stains.
	3720-3721	1		No samples.
	3721-3746	25		Siltstone, as in 3688-3720.
	3746-3761	15		Siltstone, locally shaly, medium to dark gray, moder- ately soft, flaky, no apparent bedding to poorly fissile, argillaceous, with: rare muscovite and rare carbonaceous material.
	3761-3952	191		Shale, locally silty, medium to dark gray, brown (rare) moderately soft, flaky, fair to good fissility, argillaceous, with: rare muscovite, rare carbonaceous material, and rare iron oxide stains.
	3952-4017	65		Interbedded; Shale, as in 3761-3952, with; Siltstone, locally finely sandy, light gray, moderately hard, brittle, no apparent bedding, siliceous, argillaceous, with: common biotite, common muscovite, and rare carbonaceous material.
	4017-4075	58		Shale, locally carbonaceous, medium to dark gray, black, moderately soft, flaky, fair to good fissility, argillaceous, with: rare muscovite, rare pyrite.
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4075-4087		12		Shale, carbonaceous, soft, flaky, fair to with: rare muscovite, oxide stains.	dark gray, black, moderately good fissility, argillaceous, common pyrite, and rare iron
4087-4114		27		Interbedded; Shale, a light to medium gray, apparent bedding, sil muscovite, abundant p	as in 4075-4087, with; Siltstone, moderately hard, brittle, no iceous, argillaceous, with: rare byrite.
4114-4174		60		Siltstone, locally sh moderately hard, brit poorly fissile, argil common muscovite, and	aly, medium to dark gray, brown, tle, no apparent bedding to laceous, with: rare biotite, l rare carbonaceous material.
4174-5444		1270		No samples.	
5444	Total	Depth			

VDMR Well No. W-444

## GEOLOGIC SUMMARY

-7-

Mississippian System

Bluestone Formation	samples start	2420
	bottom	2420 <u>+</u>
Princeton Sandstone	top	2420 <u>+</u>
	bottom	2566
Hinton Formation	top	2566
	bottom	(?)
Stony Gap Sandstone	top	(?)
	bottom	(?)
Bluefield Formation	top	(?)
	bottom	3063
Greenbrier Limestone	top	3063
	bottom	3478
Maccrady-Price Formations	top	3478
	bottom	3761
Mississippian-Devonian Systems		
Big Stone Gap Shale	top	3761
	bottom	4087
Devonian System		
Devonian undivided	top	4087
	in	4174 (deepest sample)

Correlations by: J. M. Wilson and R. C. Milici

September 1963

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