

A-26-LE

VDMR Well No. 75

Operator: Robert Vorhees  
Farm: Mill Davis No. 1  
Location: Lee County, Virginia  
5875'S. of 36°40'  
6300'E. of 83°20'

Geologic Log:  
Samples examined  
by Warren J. Souder,  
Virginia Division of  
Mineral Resources,  
July, 1964

Elevation: 1620'  
Total Depth: 4406'  
Commenced: April 1947  
Completed: August 1947  
Result: Dry and abandoned. (Reported oil show at 2535-2537)

GEOLOGIC LOG

Samples are available from 170' to total depth of 4406'  
At 170' the samples are Copper Ridge dolomite of Cambrian age

<u>Depth</u>	<u>Thickness</u>	<u>Description</u>
170-250	80'	Dolomitic limestone, light grey-brown, dense, with dolomite, tan, crystalline, granular, sucrosic, porous. Variable amounts of chert, cream to light grey, with some oolities.  180-183 - Very cherty  183-215 - With granular, sucrosic, porous dolomite  215-225 - With a few rounded, frosted, sand grains  240-250 - With granular, sucrosic, whitish porous dolomite.
250-285	35'	Dolomite, dark grey-brown, crystalline, dense, cherty, with a few vugs.  270-275 - With some light tan dolomite
285-342	57'	Dolomite, dark grey-brown, crystalline, granular, sucrosic, hard, cherty.  315-335 - No samples
342-510	158'	Dolomite, dark brown, sucrosic, porous, with a few rounded, frosted sand grains.
510-542	32'	Dolomite, grey to brown, finely crystalline, dense to sucrosic, cherty.
542-725	183	Dolomite, dark brown, crystalline, granular, sucrosic, porous.

		580-648 - Dolomite is cherty, more dense, less porous
		648-725 - Dolomite is lighter colored, more grey
		705-712 - No samples
		720-725 - Dolomite is cherty
725-780	55'	Thrust Fault Zone. In the zone samples show mixed lithologies of the overlying Copper Ridge dolomite and the underlying Clinton shale.
		725-745 - Shale, clay, dark grey, with dolomite, dark brown, crystalline, sucrosic, cherty.
		745-750 - Dolomite, dark brown, dense, finely crystalline.
		750-780 - Shale, clay, grey-green, platy, soft, and sandstone, which is white, fine grained to silty, and shale with some maroon, iron staining, mixed with dark brown, dense. dolomite.
Clinton Shale		
780-865	85'	Shale, clay, dark grey, soft, platy, finely micaceous.
		800-805 - Shale is sandy
		810-825 - No samples
		832-840 - No samples
		857-865 - Shale is sandy
865-885	20'	Shale, grey, hard, platy, siliceous, silty, finely micaceous.
885-948	63'	Shale, clay, dark grey, soft, platy, finely micaceous
		925-935 - With a few maroon shale chips
		935-948 - With some reddish to bright maroon "Clinton Iron" pellets with centrally depressed discs.
948-1005	57'	Shale, clay, dull maroon, platy, medium soft, contains fine mica, with variable amounts of shale, grey-green, clay, medium soft.
1005-1015	10'	Sandstone, grey-green, hard, tight, fine grained, calcitic.
		1005-1010 - With some dark maroon ironstone, no pellets.

- 3 -

1015-1062	47'	Shale, clay, grey-green, soft, platy, micaceous, with some shale, clay, maroon, and an occasional interbedded siltstone.
Clinch Formation (Poor Valley Ridge member)		
1062-1095	33'	Sandstone, whitish, medium fine-grained, sub-rounded, few larger frosted sand grains, limited porosity.
1095-1110	15'	Sandstone, whitish, medium fine-grained, friable, possibly porous.
		1106-1110 - Sandstone is shaly
1110-1130	20'	Shale, clay, grey, soft, micaceous.
1130-1150	20'	Sandstone, whitish, fine-grained, well sorted, sub-rounded, friable, slightly calcareous, porous.
1150-1180	30'	Sandstone, grey-green, well cemented, slightly calcareous, less friable, less porosity, with some grey shale.
		(Hagan Shale member)
1180-1230	50'	Shale, clay, dark grey, medium soft, platy, silty, finely micaceous.
		1210-1230 - Shale contains more silt, is harder, with an occasional maroon shale chip.
Sequatchie Formation		
1230-1260	30'	Shale, clay, grey, medium soft, siliceous, with shale, clay, dull maroon, medium hard, micaceous, silty.
		1255-1260 - No samples
1260-1287	27'	Shale, clay, dull maroon, medium hard, slightly calcareous, siliceous, micaceous.
1287-1315	28'	Shale, clay, grey, moderately soft, calcareous, silty.
		1310-1315 - With a few maroon chips.

- 4 -

1315-1456	141'	Shale, grey, medium soft, calcareous, with interbedded limestone, dark grey, crystalline, fossiliferous, argillaceous.  1356-1456 - With some interbedded maroon shale.
1456-1465	9'	Limestone, grey-whitish, mottled, crystalline, fossiliferous.
1465-1490	25'	Shale, clay, grey, medium soft, platy, calcareous, with interbedded limestone, grey to whitish mottled, crystalline, fossiliferous, with some maroon shale.
1490-1540	50'	Shale, clay, maroon, medium hard, micaceous, siliceous, calcareous, with interbedded limestone, grey, to light grey mottled, argillaceous, fossiliferous, also, interbedded shale, clay, grey, medium soft, platy.
Reedsville Shale		
1540-1997	457'	Shale, dark grey, platy, medium soft, calcareous, with interbedded limestone, grey to whitish mottled, fossiliferous.  1575-1585 - Limestone stringer, as above 1600-1605 - Limestone stringer, as above 1635-1640 - No samples 1640-1645 - Limestone stringer, as above 1662-1668 - Limestone stringer, as above 1725-1747 - Interbedded limestone, as above 1747-1755 - No samples 1772-1783 - No samples 1789-1796 - No samples 1805-1815 - No samples 1856-1877 - Limestone stringer, as above 1950-1975 - Interbedded stringers of limestone, as above

## Trenton Limestone, (upper part)

1997-2060

63'

Shale, grey to grey-green, platy, medium soft, calcitic, micaceous, with interbedded limestone, dark grey to white mottled, crystalline to finely crystalline, argillaceous, fossiliferous.

(Note: The top of the Trenton is customarily picked at the top of a limey section or where the section is predominantly limestone rather than shale. In this interval in this well the section is predominantly shale, but has more limestone than the section above).

2020-2060 - More interbedded limestone

2025-2060 - Limestone is slightly cherty, brown, splintery.

## (Middle Trenton)

2060-2261

201'

Limestone, grey to grey-brown tinted, finely crystalline, dense, to light grey, white mottled, coarse to medium-coarse crystalline, contains chert, which is brown to light brown to light grey, calcareous, containing platy partings. There is scattered crystalline porosity throughout in the light grey-white mottled fossiliferous limestone.

2074-2083 - With much brown chert

2114-2136 - With limestone, very dark grey, to black, dense, and shale, clay, black, calcareous.

2141-2151 - With scattered brown chert

2151-2261 - With variable amounts of dark grey shale, clay, platy, calcareous, medium soft.

## (Lower Trenton)

2261-2406

145'

Limestone, dark grey-brown, argillaceous, finely crystalline, dense, and grey-white mottled, crystalline to coarse crystalline, fossiliferous; with shale, dark grey to black, very calcareous. There is much more shale than in the section above and could be called a very argillaceous limestone. Slightly cherty.

2386-2406 - Considerable shale, dark grey-black, very calcareous.

- 6 -

2406-2535	129'	Limestone, light grey, dense, crystalline, and light grey, white mottled, fossiliferous, with interbedded shale, grey to dark grey, platy, calcareous. 2450-2455 - With trace of chert 2490-2510 - Predominantly shale, as above 2510-2535 - Increase in limestone, as above 2535 - - Oil show reported
Eggleston Limestone		
2535-2549	14'	Limestone, brown to light brown, dense, finely crystalline, argillaceous, with some limestone, medium fine, white mottled, crystalline, porous (Samples are finely pulverized).
2549-2551	2'	Bentonite, light green, slightly micaceous, soft, and limestone, grey to whitish mottled, crystalline, fossiliferous, and dark brown, crystalline, dense.
2551-2554	3'	Limestone, dark grey-brown, argillaceous.
2554-2565	11'	Shale, grey, medium soft, very calcareous, smooth, with few thin plates of calcite on bedding planes. "Mudstone".
2565-2570	5'	Bentonite, light green with some dark green, soft, micaceous, with shale, as above.
2570-2595	25'	Shale, as above, containing scattered clusters of calcite crystals. 2582-2595 - Chert, white, milky, and dark brown.
2595-2673	78'	Limestone, dark brown, siliceous, argillaceous, contains calcite crystals, and milky chert. 2607-2617 - Limestone has v. fractures 2629-2635 - With chert, dark brown 2635-2645 - No samples 2653-2673 - With some shaly, platy, dark grey, argillaceous limestone.

- 7 -

2673-2945

272'

Limestone, dark grey-brown, platy, argillaceous, clusters of calcite crystals, and some limestone, grey to light grey, fossiliferous.

2680 - Predominantly limestone, dark brown, dense, a few fossils, calcite crystals and plates on beddings, slightly siliceous.

2705-2718 - Increase in limestone, white, argillaceous, soft.

2718-2945 - As above with dark brown, dense limestone.

2775-2780 - No samples

2775-2945 - With cherty, dark brown, splintery, limestone.

2853-2875 - No samples

2880-2885 - No samples

2904-2945 - No samples

2945-3582

637'

Limestone, grey-dark brown, dense, contains a few fossils, argillaceous, a few calcite crystals in fractures and on faces and bedding planes; some limestone light grey to white, argillaceous and some limestone, crystalline, granular, slightly siliceous.

(Note: From the upper part of the Eggleston limestone to the top of the Mosheim limestone, separation into formations or members is not feasible on the basis of these samples).

3027-3048 - Slight increase in limestone, light grey, coarse crystalline, some mottling, a few fossils.

3064-3140 - Possible thin porous zones of crystalline limestone or dolomitized limestone, because of the presence of porous chips.

3150-3155 - With platy argillaceous limestone.

3195-3507 - Coarse crystalline limestone is absent.

- 8 -

- 3220-3225 - With chert, grey
- 3285-3317 - Limestone, brown, dense, containing some pin-point open vugs, with black color, vugs appear to be disconnected. Some vugs have calcite crystals as fillings. Some pyrite.
- 3312-3317 - No samples
- 3327-3337 - No samples
- 3342-3350 - No samples
- 3356-3360 - No samples
- 3381-3386 - No samples
- 3391-3402 - No samples
- 3402-3407 - With chert, smokey
- 3457-3462 - With chert, milky
- 3467-3472 - With a few fossils
- 3502-3507 - With some limestone, coarse crystalline, fossiliferous, containing disseminated pyrite.
- 3547-3552 - With pyrite crystals
- 3572-3582 - With chert, white and brown.
- 3582-3722                      140'
- Limestone, grey-light brown, finely crystalline, dense, with large calcite crystals, calcite crystals in inter-disseminated "birdseye" form, some pyrite crystals, a relatively "pure" limestone.
- 3602-3607 - Some fracturing
- 3612-3617 - With some large calcite crystals.
- 3722-3817                      95'
- Limestone, dark grey to brown, argillaceous, siliceous, with black chert.
- 3757-3762 - Much black chert
- 3802-3817 - Limestone is less argillaceous.

3817-3895	78'	Limestone, grey to light brown, finely crystalline, dense, with aggregates of calcite crystals, slightly siliceous and occasional dark brown to black chert. Some shale, grey-black, calcareous.
		3842-3860 - Almost no aggregates of calcite crystals
		3860-3865 - Contains calcite and pyrite crystals.
		3875-3895 - Zone of some porosity in limestone, granular, crystalline, light grey, and some limestone, light grey, white mottled, medium coarse crystalline. Fine pyrite crystals.
3895-4010	115'	Limestone, grey-brown to dark brown, black, argillaceous and shaley, dense. Shale, dark grey, black, calcareous.
		3955-4010 - Increase in shale. Interbedded dolomite, granular, porous.
Mascot Dolomite		
4010-4030	20'	Dolomite, light grey, crystalline, granular, porous, a few pink tints, and chert, white, and limestone light grey, brown, crystalline, dense, a "stinkstone".
4030-4235	205'	Dolomitic limestone, light grey-brown, crystalline, dense, occasional pink tint, and some limestone, dark grey-black, argillaceous, and some shale, dark grey, calcareous.
		4045-4055 - With dolomite, light grey-tan, granular, sucrosic, porous.
		4067-4072 - With dolomite, light grey-tan, granular, some porosity.
		4097-4102 - With disseminated calcite crystals
		4117-4152 - With dolomite, coarse crystalline, some porosity.
		4185-4215 - Lighter tan color

- 10 -

4215-4225 - With chert, milky, small oolites (?)

4225-4235 - With some dolomite, coarse crystalline.

4235-4270                      35'                      Sandstone, white fine to medium fine, grained angular, clear grains, pulverized, dolomite matrix, no porosity.

4270-4406 T. D.                      136'                      Dolomite, light tan, granular, and tan, coarse, with milky chert and with scattered sand grains, occasional porosity.

4325-4340 - With a few pyrite crystals

4365-4406 - Dolomite is cherty, white.