

County: Middlesex
VDMR Well No. 2056

Well: MID-P-8 (USGS)

Farm: Carlston

Driller: Fetterhoff Bros.

Location: Urbanna Quadrangle

in NNE Urbanna on Rappahannock River

E. of 76°35', S of 37°40'

Elevation: 7'

Total depth: 542'

Started drilling: June, 1967

Completed drilling: June, 1967

Sample description by: R. H. Teifke, Virginia Division of Mineral Resources

References: No specific reference

GEOLOGIC SUMMARY

Depth (feet)	Thickness (feet)	Formation (and remarks)
0.0-61.0	61.0	Yorktown Formation
61.0-215.0	154.0	Calvert Formation
215.0-256.0	41.0	Chickahominy Formation
256.0-348.0	92.0	Nanjemoy Formation
348.0-461.0	113.0	Mattaponi Formation
461.0-542.0	81.0	Patuxent Formation

GEOLOGIC LOG

Depth (feet)	Thickness (feet)	Description
YORKTOWN FORMATION (0-61')		
0.0-10.0	10.0	Sand - tan, clean; fine- to medium-grained, well sorted, angular-to subangular; clear quartz, with accessory magnetite and muscovite
10.0-20.0	10.0	Sand - light-brown, sparse ferruginous clay binder; fine-grained, well-sorted, angular; clear quartz, with accessory magnetite, muscovite, and light-green weathered glauconite
20.0-30.0	10.0	Sand - light-grayish-brown, trace of clay, trace of shell; fine-grained, well-sorted angular; minor hornblende, weathered glauconite, muscovite; trace of echinoid spines and foraminifers
30.0-41.0	11.0	Sand - gray, trace of clay; fine-grained, fairly-well-sorted, angular to subangular; clear to greenish quartz, with small amounts of glauconite and muscovite; 10 percent pelecypod shell fragments, and a few echinoid spines and ostracods
41.0-51.0	10.0	" 25 percent shell fragments
51.0-61.0	10.0	Sand and shell - tan, very slightly clayey; 50 percent sand - fine-grained, well-sorted, angular; 50 percent pelecypod shell fragments, and a few echinoid spines and <u>Turritella</u>
CALVERT FORMATION (61.0'-215.0')		
61.0-71.0	10.0	Shell and clay - 50 percent pelecypod shell fragments; 50 percent brownish-gray, vortically sand-free clay; a very few foraminifers and gastropods; trace of diatoms
71.0-82.0	11.0	" 65 percent shell, 35 percent clay

County: Middlesex
VDMR Well No. 2056

Depth- (feet)	Thickness (feet)	Description
82.0-92.0	10.0	Clay - brownish-gray, with 15 percent shell fragments; small amount of fine-grained sand, with traces of glauconite, pyrite, carbonaceous material; a very few foraminifers; trace of diatoms
92.0-102.0	10.0	" with 30 percent shell fragments
102.0-112.0	10.0	" with 15 percent shell fragments
112.0-129.0	17.0	Clay - gray, trace of fine sand, 10 percent shell fragments; traces of phosphorite and glauconite; a few foraminifers; very slightly diatomaceous
123.0-133.0	10.0	" diatomaceous, trace of shell material
133.0-143.0	10.0	" "
143.0-153.0	10.0	" "
153.0-164.0	11.0	" "
164.0-174.0	10.0	Clay - pale-gray, pulverulent, trace of fine sand; very diatomaceous; foraminifers (<u>Nonion</u> , <u>Uvigerina</u>) common but not abundant
174.0-184.0	10.0	" foraminifers moderately abundant (<u>Nonion</u> , <u>Uvigerina</u> , <u>Bolivina</u> , <u>Virgulina</u>)
184.0-194.0	10.0	" foraminifers abundant (<u>Nonion</u> , <u>Uvigerina</u> , <u>Bolivina</u> , <u>Virgulina</u> , <u>Dentalina</u> , <u>Nodosavia</u> , <u>Cibicides</u> , <u>Textuloria</u>)
194.0-205.0	11.0	Diatomaceous earth - moderately foraminiferal (<u>Siphogenerina lamellata</u> zone), with a few <u>Nonion</u> , <u>Uvigerina</u>
205.0-215.0	10.0	"

County: Middlesex
VDMR Well No. 2056

Depth (feet)	Thickness (feet)	Description
CHICKAHOMINY FORMATION (215.0'-256.0')		
215.0-225.0	10.0	Sand and shell - moderately-clayey (brownish-gray clay); 60 percent pelecypod shell fragments; 40 percent sand - medium- to coarse-grained, fairly-well-sorted, subangular-to subrounded; clear quartz with 5 percent phosphatic bone fragments
225.0-235.0	10.0	Sand - greenish-gray, clay binder, 3 percent shell fragments, medium-to coarse-grained, fairly well-sorted, subangular -to rounded; clear quartz; a few phosphatic nodules, bone fragments, and shell fragments
235.0-246.0	11.0	Sand - abundant matrix of dark greenish-gray clay; fine- to very-coarse-grained, rather-poorly-sorted, variably-rounded; clear quartz, with 5 percent pelecypod shell fragments; foraminifers common, but not abundant; a few echinoid spines and ostracods
246.0-256.0	10.0	"
NANJEMOY FORMATION (256.0'-348.0')		
256.0-266.0	10.0	Sand - clayey, clay is locally calcareous, 10 percent shell fragments and fragments of arenaceous shell limestone; fine- to medium-grained, moderately-sorted, angular to sub-rounded; calcarenitic (bioclastic), slightly-to moderately glauconitic; poorly-preserved foraminifers abundant, abraded echinoid spines common
266.0-276.0	10.0	"
276.0-287.0	11.0	Sand and shell - abundant matrix of tan clay, about 30 percent shell material, mostly pelecypods, with a few bryozoans, echinoid remains, and fragments of arenaceous shell limestone; fine- to very coarse-grained, poorly-sorted, variably-rounded; clear quartz, with about 5 percent fresh glauconite; phosphatic, shell, and bone fragments common; poorly-preserved (reworked) foraminifers common

County: Middlesex
VDMR Well No. 2056

Depth (feet)	Thickness (feet)	Description
287.0-297.0	10.0	Sand and limestone - 40 percent arenaceous, moderately fossiliferous limestone containing quartz, goethite after glauconite, bryozoans, pelecypods, and a few algal structures; 60 percent fine- to very coarse-grained, poorly sorted, rounded sand; clear to stained quartz and goethite after glauconite in subequal amounts; minor phosphorite; poorly preserved foraminifers moderately abundant
297.0-307.0	10.0	Sand - moderately abundant matrix of dark-gray clay; fine- to very coarse-grained, poorly-sorted, rounded; coarse fraction consists of well rounded and polished goethite after glauconite, and stained quartz; fine fraction consists of moderately altered glauconite and subordinate quartz; moderately foraminiferal including some planktonic forms
307.0-317.0	10.0	"
317.0-328.0	11.0	"
328.0-338.0	10.0	"
338.0-348.0	10.0	"
MATTAPONI FORMATION (348.0'-461.0')		
348.0-358.0	10.0	Sand - gray clay binder; medium- to coarse-grained, moderately-sorted; blackish-green autochthonous glauconite with subordinate quartz; a few foraminifers
358.0-369.0	11.0	Clay - light-brown, very-sandy, a few large pelecypod shell fragments; sand is medium- to very-coarse-grained, moderately-sorted; predominantly fresh autochthonous glauconite
369.0-379.0	10.0	"
379.0-389.0	10.0	"

County: Middlesex
VDMR Well No. 2056

Depth (feet)	Thickness (feet)	Description
389.0-399.0	10.0	Clay - gray, very-sandy, a few shell fragments; sand is fine- to very coarse-grained, poorly-sorted; 50 percent fine- to medium-grained, angular quartz, 50 percent medium- to very coarse-grained, fresh, autochthonous glauconite; trace of muscovite; a few phosphatic nodules; a few fish teeth, bryozoans, and foraminifers (<u>Robulus</u> , <u>Nodosaria</u>)
399.0-410.0	11.0	" sand fraction coarser, more glauconitic
410.0-420.0	10.0	" "
420.0-430.0	10.0	Clay - interlaminated pink and greenish-gray; moderately sandy (pink) to sandy (greenish-gray); sand is dark-green, autochthonous glauconite, with subordinate quartz; a few foraminifers (<u>Robulus</u> , <u>Nodosaria</u>)
430.0-440.0	10.0	" very sandy, 10 percent coarse shell material
440.0-451.0	11.0	" very sandy, 20 percent coarse shell material
451.0-461.0	10.0	" very sandy, 5 percent shell material, very slightly-feldspathic
PATUXENT FORMATION (461.0'-542.0')		
461.0-471.0	10.0	Sand - gray, clean; coarse-grained, fairly-well-sorted, subangular to subrounded; feldspathic; 5 percent glauconite
471.0-481.0	10.0	" coarse- to very-coarse-grained
481.0-490.0	9.0	" "
490.0-492.0	2.0	No sample

County: Middlesex
VDMR Well No. 2056

Depth (feet)	Thickness (feet)	Description
492.0-502.0	10.0	Sand and gravel - gray, trace of clay; 50 percent granule gravel, 50 percent coarse- to very-coarse-grained, subangular to subrounded sand; both fractions feldspathic; sand fraction moderately glauconitic; garnet commo
502.0-512.0	10.0	" very slightly glauconitic
512.0-522.0	10.0	" "
522.0-532.0	10.0	" "
532.0-542.0	10.0	" "
542.0		Clay - mottled gray and brown, sandy; sand is poorly sorted, very glauconitic

INTERVAL SHEET

Page 1 of 1

VDMR Well No: 2056

Date rec'd: 11/29/67

Sample Interval: from 0 to: 542

PROP: MID-P-8

Number of samples: 54

COMP:

Total Depth: 542

COUNTY: Middlesex

Oil or Gas: Water: Exploratory: X

From-To	From-To	From-To	From-To
0 - 10	297 - 307	-	-
10 - 20	307 - 317	-	-
20 - 30	317 - 328	-	-
30 - 41	328 - 338	-	-
41 - 51	338 - 348	-	-
51 - 61	348 - 358	-	-
61 - 71	358 - 369	-	-
71 - 82	369 - 379	-	-
82 - 92	379 - 389	-	-
92 - 102	389 - 399	-	-
102 - 112	399 - 410	-	-
112 - 129	410 - 420	-	-
123 - 133	420 - 430	-	-
133 - 143	430 - 440	-	-
143 - 153	440 - 451	-	-
153 - 164	451 - 461	-	-
164 - 174	461 - 471	-	-
174 - 184	471 - 481	-	-
184 - 194	481 - 490	-	-
194 - 205	-	-	-
205 - 215	492 - 502	-	-
215 - 225	502 - 512	-	-
225 - 235	512 - 522	-	-
235 - 246	522 - 532	-	-
246 - 256	-	-	-
256 - 266	533 - 542	-	-
266 - 276	542 -	-	-
276 - 286	-	-	-
-	-	-	-
287 - 297	-	-	-

All intervals have both washed and unwashed samples

Drilled 6/7/67

Fetterhoff

Elev.: 27'

Owner: Mr. Carlston

MID-T-8
(was MID-T-8)

INTERVAL SHEET

E

Page of

VDMR Well No: **WELL NO. 2056**

Date rec'd: 7/20/67

Sample-Interval: from 0 to 542

PROP:

Number of samples: 54

COMP:

in NNE Urbanna
on Rappahannock
R.

Total Depth: 542'

COUNTY: Middlesex

Oil or Gas: Water: Exploratory:

LNW		From-To	From-To	From-To	From-To
0	-	10	297	-	307
10	-	20	307	-	317
20	-	30	317	-	328
30	-	41	328	-	338
41	-	51	338	-	348
51	-	61	348	-	358
61	-	71	358	-	369
71	-	82	369	-	379
82	-	92	379	-	389
92	-	102	389	-	399
102	-	112	399	-	410
112	-	129	410	-	420
123	-	133	420	-	430
133	-	143	430	-	440
143	-	153	440	-	451
153	-	164	451	-	461
164	-	174	461	-	471
174	-	184	471	-	481
184	-	194	481	-	490
194	-	205		-	
205	-	215	492	-	502
215	-	225	502	-	512
225	-	235	512	-	522
235	-	246	522	-	532
246	-	256		-	
256	-	266	533	-	542
266	-	276	542	-	
276	-	286		-	
287	-	297		-	

LS sample, lower hand streak

OWNER : Carlston
DRILLER : Fetterhoff Bros.
COUNTY : middlesex

REPOSITORY NUMBER : 2056
ELEVATION : 8
TOTAL DEPTH : 542
County: Middlesex

LOCATION : in ^{northeast section of} ~~NNE~~ Urbanna on Rappahannock River ; east of 76° 35' , south of 37° 40' .
~~VDNR Well No. 2056~~

Well: MID-P-8 (USGS)

Farm: Carlston

Driller: Fetterhoff Bros.

Location: Urbanna Quadrangle

in NNE Urbanna on Rappahannock River

E. of 76°35', S of 37°40'

Elevation: ~~7~~ 8

Total depth: 542'

Started drilling: June, 1967

Completed drilling: June, 1967

Sample description by: R. H. Teifke, Virginia Division of Mineral Resources

References: No specific reference

GEOLOGIC SUMMARY

Depth (feet)	Thickness (feet)	Formation (and remarks)
0.0-61.0	61.0	Yorktown Formation
61.0- ^{256.0} 215.0	154.0	Calvert Formation
215.0-256.0	41.0	Chickahominy Formation
256.0-348.0	92.0	Nanjemoy Formation
348.0-461.0	113.0	Mattaponi Formation
461.0-542.0	81.0	Patuxent Formation

R. H. Teifke
3/2/72

GEOLOGIC LOG

Depth (feet)	Thickness (feet)	Description
--------------	------------------	-------------

YORKTOWN FORMATION (0-61')

/ 0.0-10.0	10.0	Sand - tan, clean, ² fine- to medium-grained, well-sorted, angular, ¹ to subangular; clear quartz, ² with accessory magnetite and muscovite.
------------	------	---

✓ 10.0-20.0	10.0	Sand - light-brown, sparse ³ ferruginous clay binder, ² fine-grained, well-sorted, angular; clear quartz, ¹ with accessory magnetite, muscovite, and light-green ² weathered glauconite.
-------------	------	---

✓ 20.0-30.0	10.0	Sand - light ³ grayish-brown, trace of clay, ² trace of shell ; fine-grained, well-sorted angular; minor hornblende, weathered glauconite, muscovite; trace of echinoid spines and foraminifers.
-------------	------	---

✓ 30.0-41.0	11.0	Sand - gray, trace of clay, ³ fine-grained, fairly ² well-sorted, angular to subangular; clear to greenish quartz, with small amounts of glauconite and muscovite; 10 percent pelecypod shell fragments, and a few echinoid spines and ostracods.
-------------	------	---

✓ 41.0-51.0	10.0	" ² except: with 25 percent shell fragments.
-------------	------	---

✓ 51.0-61.0	10.0	Sand and ² Shell - tan, very slightly clayey, 50 percent sand fine-grained, well-sorted, angular; 50 percent pelecypod shell fragments, and a few echinoid spines and <u>Turritella</u> .
-------------	------	---

CALVERT FORMATION (61.0' - ^{256'} ~~215.04'~~)

/ 61.0-71.0	10.0	Shell and ¹ Clay - 50 percent pelecypod shell fragments; 50 percent brownish-gray, vertically sand-free clay; a very few foraminifers and gastropods; trace of diatoms.
-------------	------	---

✓ 71.0-82.0	11.0	" ² except: with 65 percent shell, 35 percent clay.
-------------	------	--

Depth- (feet)	Thickness (feet)	Description
✓ 82.0-92.0	10.0	² <i>small percentage of fine-grained sand</i> ³ Clay - brownish-gray; with 15 percent shell fragments ; small amount of fine-grained sand , with traces of glauconite, pyrite, carbonaceous material; a very few foraminifers; trace of diatoms.
✓ 92.0-102.0	10.0	except: " ² with 30 percent shell fragments.
✓ 102.0-112.0	10.0	except: " ² with 15 percent shell fragments.
✓ 112.0-129.0	17.0	³ fine-grained Clay - gray, trace of fine sand, (10 percent shell fragments) traces of phosphorite and glauconite; a few foraminifers; very slightly diatomaceous.
✓ 123.0-133.0	10.0	except: " ² diatomaceous, trace of shell material.
✓ 133.0-143.0	10.0	" <i>see</i>
○ ✓ 143.0-153.0	10.0	" <i>see</i>
✓ 153.0-164.0	11.0	" <i>see</i>
✓ 164.0-174.0	10.0	³ fine-grained Clay - pale-gray, pulverulent, trace of fine sand; very diatomaceous; foraminifers (<u>Nonion</u> , <u>Uvigerina</u>) common but not abundant.
✓ 174.0-184.0	10.0	except: " ² foraminifers moderately abundant (<u>Nonion</u> , <u>Uvigerina</u> , <u>Bolivina</u> , <u>Virgulina</u>).
✓ 184.0-194.0	10.0	except: " ² foraminifers abundant (<u>Nonion</u> , <u>Uvigerina</u> , <u>Bolivina</u> , <u>Virgulina</u> , <u>Dentalina</u> , <u>Nodosavia</u> , <u>Cibicides</u> , <u>Textularia</u>).
✓ 194.0-205.0	11.0	Diatomaceous earth - moderately foraminiferal (<u>Siphogenerina lamellata</u> zone), with a few <u>Nonion</u> , <u>Uvigerina</u> .
✓ 205.0-215.0	10.0	"

Depth (feet)	Thickness (feet)	Description
--------------	------------------	-------------

~~CHICKAHOMINY FORMATION (215.0-256.0')~~

215.0-225.0	10.0	Sand and Shell - moderately clayey (brownish-gray clay); <u>60 percent</u> pelecypod shell fragments; 40 percent sand - medium- to coarse-grained, fairly well-sorted, subangular to subrounded; ^(40 percent) clear quartz with 5 percent phosphatic bone fragments.
-------------	------	--

225.0-235.0	10.0	^{1 binder of} Sand - greenish-gray clay binder 5 percent shell fragments medium- to coarse-grained, fairly well-sorted, subangular to rounded; clear quartz ^{with} a few phosphatic nodules, bone fragments, and shell fragments.
-------------	------	--

235.0-246.0	11.0	Sand - abundant matrix of dark greenish-gray clay; fine- to very coarse-grained, rather poorly sorted, variably rounded; clear quartz; with 5 percent pelecypod shell fragments; foraminifers common, but not abundant; a few echinoid spines and ostracods.
-------------	------	--

246.0-256.0	10.0	
-------------	------	--

NANJEMOY FORMATION (256.0-348.0')

256.0-266.0	10.0	¹ Sand - clayey, clay is locally calcareous, ²⁻³ 10 percent shell fragments and fragments of ^{sandy} arenaceous shell limestone; fine- to medium-grained, moderately sorted, angular to subrounded; calcarenitic (bioclastic), slightly to moderately glauconitic; poorly-preserved foraminifers abundant; abraded echinoid spines common.
-------------	------	---

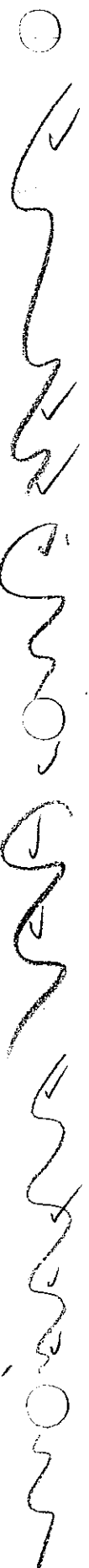
266.0-276.0	10.0	
-------------	------	--

276.0-287.0	11.0	¹ Sand and Shell - abundant matrix of tan clay, about 30 percent shell material, mostly pelecypods, with a few bryozoans, echinoid ^{spines and plates} remains, and fragments of ^{sandy} arenaceous shell limestone; fine- to very coarse-grained, poorly sorted, variably rounded; clear quartz, with about 5 percent fresh glauconite; phosphatic shell and bone fragments common; poorly preserved (reworked) foraminifers common.
-------------	------	--



Depth (feet)	Thickness (feet)	Description
287.0-297.0	10.0	Sand and ^L limestone - 40 percent ^{sandy} arenaceous, moderately fossiliferous limestone containing quartz, goethite after glauconite, bryozoans, pelecypods, and a few algal structures; 60 percent fine- to very coarse-grained, poorly sorted, rounded sand; clear to stained quartz and goethite after glauconite in subequal amounts; minor phosphorite; poorly preserved foraminifers moderately abundant.
297.0-307.0	10.0	Sand - moderately abundant matrix of dark-gray clay, fine- to very coarse-grained, poorly sorted, rounded; coarse fraction consists ^{comprises} of well rounded and polished goethite after glauconite, and stained quartz; fine fraction consists of ^{comprises} moderately altered glauconite and subordinate quartz; moderately foraminiferal including some planktonic forms.
307.0-317.0	10.0	//
317.0-328.0	11.0	//
328.0-338.0	10.0	//
338.0-348.0	10.0	//
MATTAPONI FORMATION (348.0'-461.0')		
348.0-358.0	10.0	Sand - ¹ gray clay binder, ²⁻³ medium- to coarse-grained, moderately ¹ sorted; blackish-green autochthonous glauconite with subordinate quartz; a few foraminifers.
358.0-369.0	11.0	¹ Clay - light-brown, very ² sandy; ³ a few large pelecypod shell fragments; sand is medium- to very-coarse-grained, moderately ¹ sorted; predominantly fresh autochthonous glauconite; ² a few large pelecypod shell fragments.
369.0-379.0	10.0	//
379.0-389.0	10.0	//

Depth (feet)	Thickness (feet)	Description
389.0-399.0	10.0	Clay - gray, very sandy; ¹ ³ ² a few shell fragments ; sand is fine- to very coarse-grained, poorly sorted; 50 percent fine- to medium-grained, angular quartz, 50 percent medium- to very coarse-grained, fresh, autochthonous glauconite; trace of muscovite; a few ^{shell fragments} phosphatic nodules, a few fish teeth, bryozoans, and foraminifers (<u>Robulus</u> , <u>Nodosaria</u>).
399.0-410.0	11.0	" ^{except:} ^{is} sand fraction coarser, more glauconitic.
410.0-420.0	10.0	" ^{see}
420.0-430.0	10.0	Clay - interlaminated pink and greenish-gray; moderately sandy (pink) to sandy (greenish-gray); sand is dark-green, autochthonous glauconite, with subordinate quartz; a few foraminifers (<u>Robulus</u> , <u>Nodosaria</u>).
430.0-440.0	10.0	" ^{except:} very sandy; 10 percent coarse shell material.
440.0-451.0	11.0	" ^{except:} very sandy; 20 percent coarse shell material.
451.0-461.0	10.0	" ^{except:} very sandy; 5 percent shell material; <u>very slightly-feldspathic</u> .
PATUXENT FORMATION (461.0'-542.0')		
461.0-471.0	10.0	Sand - gray, clean, coarse-grained, fairly well-sorted, subangular to subrounded; feldspathic; 5 percent glauconite.
471.0-481.0	10.0	" ^{except:} coarse- to very-coarse-grained.
481.0-490.0	9.0	" ^{see}
490.0-492.0	2.0	No sample



County: Middlesex
VDMR Well No. 2056

Depth (feet)	Thickness (feet)	Description
492.0-502.0	10.0	Sand and gravel - gray, trace of clay; 50 percent granule gravel, 50 percent coarse- to very-coarse-grained, subangular to subrounded sand; both fractions feldspathic; sand fraction moderately glauconitic; garnet comm <i>1 3 2</i>
502.0-512.0	10.0	" <i>except</i> very slightly glauconitic .
512.0-522.0	10.0	" <i>ell</i>
522.0-532.0	10.0	" <i>ell</i>
532.0-542.0	10.0	" <i>ell</i>
542.0		Clay - mottled gray and brown, <u>sandy</u> ; sand is poorly sorted, very glauconitic .