

VDMR Well No. 2097
County: Nansemond

Well: C-173

Property: Atlantic Coast Line Railroad

Driller: Norfolk and Western Railway

Location: 3 miles NE of Driver (at Deanes) on railroad right-of-way;
W of $76^{\circ} 27' 30''$, N of $36^{\circ} 50' 00''$

Elevation: 25 feet

Total Depth: 380 feet

Started drilling: June, 1966 Completed drilling: June, 1966

Sample description by : R. H. Teifke, Virginia Division of Mineral
Resources, February , 1968

GEOLOGIC LOG *

Depth in
feet

YORKTOWN FORMATION (0-^{330'}_{340'})

0-10 Clay and sand —— 50% bluish-gray clay, locally orange-brown; 50% fine-grained, well-sorted, angular sand; minor amounts of carbonaceous material, glauconite, magnetite-ilmenite, and feldspar; traces of garnet, epidote, muscovite, biotite; a very few echinoid spines

10-20 Clay and sand —— 40% bluish-gray clay, locally orange-brown; 50% fine-grained, fairly well-sorted, angular sand; 10% coarse-grained, subrounded sand with some blue quartz; much of sand is stained orange-brown; minor amounts of glauconite, magnetite-ilmenite, and feldspar; traces of green epidote, hornblende, garnet, muscovite; a very few small shell fragments

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- 20-30 Shell — fine; abraded shells and shell fragments of pelecypods and gastropods, with a few bryozoans and echinoid plates; minor amounts of sand and clay, and a few small pebbles; shell is locally cemented by black to brown organic material; a few foraminifers and ostracods
- 30-40 Shell — very slightly silty and clayey; abraded shells and shell fragments, with average diameter of 5 mm; includes pelecypods, gastropods, and a few bryozoans
- 40-50 Shell — abraded shells and shell fragments of pelecypods, gastropods, and a few scaphopods, bryozoans, and echinoid spines and plates; about 5% clayey, fine, angular quartz sand with traces of magnetite and glauconite; foraminifers and ostracods moderately abundant (miliolids and textularids prominent)
- 50-60 Sand and shell — gray, clayey; 40% coarse shell fragments; sand consists of 30% fine-grained, well-sorted, angular quartz, and 30% medium-to coarse-grained bioclasts; trace of glauconite; foraminifers and ostracods common
- 60-70 Sand — gray, clayey; 10% coarse shell fragments; 45% fine-grained, angular, clear quartz, and 45% generally coarser, more poorly - sorted bioclasts; foraminifers moderately abundant; a few ostracods
- 70-80 " 5% coarse shell fragments
- 80-90 " very few coarse shell fragments
- 90-100 Clay — gray, sandy; sand consists of 75 % fine to very fine-grained, well-sorted, angular quartz, and 25% generally coarser, sand-grade bioclasts, including numerous echinoid spines, a moderate amount of foraminifers, and a few ostracods; slightly glauconitic

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- 100-110 Sand — greenish-gray, clayey, 10% shell fragments; fine-to medium-grained, fairly well-sorted; sand is 50% clear, angular to subrounded quartz, and 50% blackish-to medium-green glauconite; traces of phosphorite and garnet; foraminifers common; a few ostracods
- 110-120 Sand — gray, clayey, 10% shell fragments; fine-to medium-grained, fairly well-sorted; 75% clear, angular quartz, and 15% blackish-to medium-green glauconite; trace of garnet; anhydrite pseudomorphs after selenite (uncommon); foraminifers common, but not abundant
- 120-130 Sand and clay — gray to yellowish-brown clayey sand with lenses of pure, light-gray clay, 10% shell fragments; sand is fine-to medium-grained, well-sorted; 80% clear to faintly yellowish, angular quartz, and 10% dark-to medium-green glauconite; pseudomorphs of soft anhydrite after crystals and crystal clusters of selenite gypsum (common); traces of kyanite, muscovite, garnet; a few foraminifers and ostracods; echinoid spines common
- 130-140 " very clayey, compact
- 140-150 Sand — greenish-gray, very clayey, 5% shell fragments; fine-to medium-grained, well-sorted, angular to subangular; clear to greenish quartz, with 5% dark -to medium-green glauconite; a few foraminifers, ostracods, gastropods, and echinoid spines and plates
- 150-160 "
- 160-170 Sand — dark greenish-gray, clayey, a few shell fragments; fine-grained, very well-sorted, angular; clear to greenish quartz, with 10% fine-grained glauconite; traces of muscovite and anhydrite pseudomorphs after selenite gypsum; a few foraminifers

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- 170-180 Clay — greenish-gray, very sandy, compact, 10% shell fragments; sand is fine-grained, well-sorted, angular; clear to greenish quartz, with 15-20% glauconite, 5% anhydrite pseudomorphs after selenite gypsum; trace of muscovite; a few foraminifers
- 180-190 " moderately and variably sandy; 3-5% glauconite
- 190-200 Sand — dark greenish-gray, clayey, trace of shell; fine-grained, well-sorted, angular; 5% each of glauconite and anhydrite pseudomorphous after gypsum; trace of glauconite; a few foraminifers and ostracods
- 200-210 "
- 210-220 "
- 220-230 " greenish-brown, very few foraminifers
- 230-240 Clay — gray, very sandy, 10% shell fragments; sand is very fine- to medium-grained, fairly well-sorted; clear to greenish angular quartz with 10% dark-green, poorly sorted glauconite; minor gypsum (authigenic, crystalline) and magnetite; a very few foraminifers and ostracods
- 240-250 " 5% glauconite
- 250-260 Clay — greenish-gray, sandy, 3-5% shell fragments; sand is fine-grained, well-sorted, angular quartz, with 5% medium-grained, dark-green glauconite, and 10% authigenic selenite gypsum
- 260-270 "
- 270-280 " moderately sandy

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280-290 Clay — gray, compact, slightly sandy, a few shell fragments; sand is fine, well sorted, angular, slightly glauconitic; abundant authigenic selenite gypsum

290-300 "

300-310 Clay — gray, very slightly sandy, a few shell fragments; sand is fine-grained, well-sorted, angular; slightly glauconitic, minor muscovite; authigenic gypsum moderately abundant; a few foraminifers

310-320 "

320-330 "

~~330-340~~ "

CALVERT FORMATION (330-375')
~~CALVERT FORMATION (340-380')~~

~~340-350~~ Clay — greenish-brown, uniformly silty, very slightly sandy; sand is fine-grained, well-sorted, angular; clear and greenish quartz, with 15-20% brown, fragmental phosphorite and a trace of glauconite; a few foraminifers, including Nonion, Siphogenerina, and Uvigerina

~~340-350~~ "

350-360 Clay — greenish-brown, sandy, trace of shell; sand is coarse, fairly well-sorted, subangular; limpid quartz, with 10% fragmental phosphorite; very slightly glauconitic; traces of garnet, pyrite, and gypsum; foraminifers common, but not abundant (Siphogenerina, Uvigerina, globigerinids)

³⁷⁵
360-370 " "
MATTAPONI FORMATION (375-380')
~~370-380~~ " with 10% coarse, dark-green glauconite
~~375~~ and a few fragments of sandy, fossiliferous white limestone

VDMR Well No. 2097

GEOLOGIC SUMMARY

	<u>Rock Unit</u>	<u>Age</u>
330 0-340	Yorktown Formation	Late Miocene
340-380	Calvert Formation	Middle Miocene
330-375		
375-380	Mattaponi Formation	Paleocene-Late Oligocene
0-100	bioclastic sand lithotype	
100-340	glauconite-bearing lithotype, variably gypsiferous	
370-380	includes small quantity of Mattaponi (Paleocene) lithotype	

* The use of the lithologic term, "clay" includes all size ranges of particles less than 1/32 mm.

R. H. Tiffey
3/7/72

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GEOLOGIC LOG *

Depth in
feet

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10-20 Clay and sand — 40% bluish-gray clay, locally orange-brown; 50% fine-grained, fairly well-sorted, angular sand; 10% coarse-grained, subrounded sand with some blue quartz; much of sand is stained orange-brown; minor amounts of glauconite, magnetite-ilmenite, and feldspar; traces of green epidote, hornblende, garnet, muscovite; a very few small shell fragments

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- 130-140 " very clayey, compact
- 140-150 Sand — greenish-gray, very clayey, 5% shell fragments; fine-to medium-grained, well-sorted, angular to subangular; clear to greenish quartz, with 5% dark-to medium-green glauconite; a few foraminifers, ostracods, gastropods, and echinoid spines and plates
- 150-160 "
- 160-170 Sand — dark greenish-gray, clayey, a few shell fragments; fine-grained, very well-sorted, angular; clear to greenish quartz, with 10% fine-grained glauconite; traces of muscovite and anhydrite pseudomorphs after selenite gypsum; a few foraminifers

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170-180	Clay —	greenish-gray, very sandy, compact, 10% shell fragments; sand is fine-grained, well-sorted, angular; clear to greenish quartz, with 15-20% glauconite, 5% anhydrite pseudomorphs after selenite gypsum; trace of muscovite; a few foraminifers
180-190	"	moderately and variably sandy; 3-5% glauconite
190-200	Sand —	dark greenish-gray, clayey, trace of shell; fine-grained, well-sorted, angular; 5% each of glauconite and anhydrite pseudomorphous after gypsum; trace of glauconite; a few foraminifers and ostracods
200-210	"	
210-220	"	
220-230	"	greenish-brown, very few foraminifers
230-240	Clay —	gray, very sandy, 10% shell fragments; sand is very fine- to medium-grained, fairly well-sorted; clear to greenish angular quartz with 10% dark-green, poorly sorted glauconite; minor gypsum (authigenic, crystalline) and magnetite; a very few foraminifers and ostracods
240-250	"	5% glauconite
250-260	Clay —	greenish-gray, sandy, 3-5% shell fragments; sand is fine-grained, well-sorted, angular quartz, with 5% medium-grained, dark-green glauconite, and 10% authigenic selenite gypsum
260-270	"	
270-280	"	moderately sandy

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280-290 Clay — gray, compact, slightly sandy, a few shell fragments; sand is fine, well sorted, angular, slightly glauconitic; abundant authigenic selenite gypsum

290-300 "

300-310 Clay — gray, very slightly sandy, a few shell fragments; sand is fine-grained, well-sorted, angular; slightly glauconitic, minor muscovite; authigenic gypsum moderately abundant; a few foraminifers

310-320 "

320-330 "

330-340 "

CALVERT FORMATION (340-380')

340-350 Clay — greenish-brown, uniformly silty, very slightly sandy; sand is fine-grained, well-sorted, angular; clear and greenish quartz, with 15-20% brown, fragmental phosphorite and a trace of glauconite; a few foraminifers, including Nonion, Siphogenerina, and Uvigerina

350-360 Clay — greenish-brown, sandy, trace of shell; sand is coarse, fairly well-sorted, subangular; limpid quartz, with 10% fragmental phosphorite; very slightly glauconitic; traces of garnet, pyrite, and gypsum; foraminifers common, but not abundant (Siphogenerina, Uvigerina, globigerinids)

360-370 "

370-380 " with 10% coarse, dark-green glauconite and a few fragments of sandy, fossiliferous white limestone

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GEOLOGIC SUMMARY

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* The use of the lithologic term, "clay" includes all size ranges of particles less than 1/32 mm.

INTERVAL SHEET

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VDMR Well No: 2097

Date rec'd: 1/26/68

Sample Interval: from 0 to: 380

PROP: C-173

Number of samples: 38

COMP:

Total Depth: 380

COUNTY: Nansemond

Oil or Gas: Water: Exploratory: X

From-To	From-To	From-To	From-To
0 - 10	300 - 310	-	-
10 - 20	310 - 320	-	-
20 - 30	320 - 330	-	-
30 - 40	330 - 340	-	-
40 - 50	340 - 350	-	-
50 - 60	350 - 360	-	-
60 - 70	360 - 370	-	-
70 - 80	370 - 380	-	-
80 - 90	-	-	-
90 - 100	-	-	-
100 - 110	-	-	-
110 - 120	-	-	-
120 - 130	-	-	-
130 - 140	-	-	-
140 - 150	-	-	-
150 - 160	-	-	-
160 - 170	-	-	-
170 - 180	-	-	-
180 - 190	-	-	-
190 - 200	-	-	-
200 - 210	-	-	-
210 - 220	-	-	-
220 - 230	-	-	-
230 - 240	-	-	-
240 - 250	-	-	-
250 - 260	-	-	-
260 - 270	-	-	-
270 - 280	-	-	-
280 - 290	-	-	-
290 - 300	-	-	-

All intervals have both washed and unwashed samples

Drilled 6/66
Continental

ELEV.: ~25'
GEOLOGIC LOG
STRIP LOG ✓

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Date rec'd: 7/19/67

PROP:



3.0 Miles NE
of Dryer on
ACL RR.

(BOWERS HILL SHEET)

COMP:

COUNTY: Nausewond

CONFIDENTIAL

NAN-T-20
C-173

INTERVAL SHEET

VDMR Well No: WELL NO. 2097

Sample Interval: from 0 to 380

Number of samples: 38

Total Depth: 380'

Oil or Gas: Water: Exploratory: ✓

LNW

From-To

From-To

From-To

From-To

25' →				
0	- 10	300	- 310	-
10	- 20	310	- 320	-
20	- 30	320	- 330	-
30	- 40	330	- 340	-
40	- 50	340	- 350	-
50	- 60	350	- 360	-
60	- 70	360	- 370	-
70	- 80	370	- 380	-
80	- 90	-	-	-
90	- 100	-	-	-
100	- 110	-	-	-
110	- 120	-	-	-
120	- 130	-	-	-
130	- 140	-	-	-
140	- 150	-	-	-
150	- 160	-	-	-
160	- 170	-	-	-
170	- 180	-	-	-
180	- 190	-	-	-
190	- 200	-	-	-
200	- 210	-	-	-
210	- 220	-	-	-
220	- 230	-	-	-
230	- 240	-	-	-
240	- 250	-	-	-
250	- 260	-	-	-
260	- 270	-	-	-
270	- 280	-	-	-
280	- 290	-	-	-
290	- 300	-	-	-

CONFIDENTIAL