

INTERVAL SHEET

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VDMR Well No: 1619

Date rec'd: 6/7/66

Sample Interval: from 0 to 910

PROP: City of Norfolk #4 (Lake Prince #5)

Number of samples: 90

COMP: Layne & Bowler, Inc.

Total Depth: 912

COUNTY: Nansemond (Suffolk)

Oil or Gas: Water: ~~X~~Exploratory:

From-To	From-To	From-To	From-To
0 - 10 *	300 - 310	600 - 610	-
10 - 20	310 - 320	610 - 620	-
20 - 30	320 - 330	620 - 630	-
30 - 40	330 - 340	630 - 640	-
40 - 50	340 - 350	640 - 650	-
50 - 60	350 - 360	650 - 660	-
60 - 70	360 - 370	660 - 670	-
70 - 80	370 - 380	670 - 680	-
80 - 90	380 - 390	680 - 690	-
90 - 100	390 - 400	690 - 700	-
100 - 110	400 - 410	700 - 710	-
110 - 120	410 - 420	710 - 720	-
120 - 130	420 - 430	720 - 730	-
130 - 140	430 - 440	740 - 750	-
140 - 150	440 - 450	750 - 760	-
150 - 160	450 - 460	760 - 770	-
160 - 170	460 - 470	770 - 780	-
170 - 180	470 - 480	780 - 790	-
180 - 190	480 - 490	790 - 800	-
190 - 200	490 - 500	800 - 810	-
200 - 210	500 - 510	810 - 820	-
210 - 220	510 - 520	820 - 830	-
220 - 230	520 - 530	830 - 840	-
230 - 240	530 - 540	840 - 850	-
240 - 250	540 - 550	850 - 860	-
250 - 260	550 - 560	860 - 870	-
260 - 270	560 - 570	870 - 880	-
270 - 280	570 - 580	880 - 890	-
280 - 290	580 - 590	890 - 900	-
290 - 300	590 - 600	900 - 910	-

* Unwashed samples only

OWNER: City of Norfolk #4 (Lake Prince #5)
DRILLER: Layne Arkansas
COUNTY: Nansemond (Suffolk)

VDMR: 1619
WWCR: 171
TOTAL DEPTH: 912'

GEOLOGIC LOG

COLUMBIA GROUP (0-10')

Depth in feet

0-10 Clay — orange-brown with some cream and gray clays, very sandy, a few large fragments of shell and wood; sand is fine- to medium-grained, moderately-sorted, subangular to subrounded; trace of glauconite; small amount of shell material including pelecypods, echinoid spines, foraminifers, and ostracods

YORKTOWN FORMATION (10-180')

10-20 Sand — orange-brown, argillaceous; fine- to medium-grained, fairly well-sorted, subangular; small amount of glauconite; abundant shell material including pelecypods, gastropods, echinoid spines, foraminifers, and a few ostracods

20-30 Sand and Shell — gray, very argillaceous, abundant gravel-size shell fragments; fine-grained, well-sorted, angular to subangular; 30-40% shell fragments in sand fraction, including pelecypods, gastropods, echinoid spines, foraminifers, and a few ostracods

30-40 Clay — gray, 40-50% silt and very fine-grained sand; a few large shells and shell fragments of pelecypods and gastropods (mostly Turritella); silt-sand fraction contains an abundance of very small shell fragments, echinoid spines, and foraminifers; slightly diatomaceous

40-50 "

50-60 "

60-70 Sand — gray, argillaceous and silty, a few gravel-size shells and shell fragments (pelecypods and Turritella); 70% very fine- to medium-grained, well-sorted (skewed fine), angular to subangular quartz, and 30% medium- to coarse-grained, fresh black glauconite; trace of muscovite; small amount of shell fragments and microfossils

70-80 "

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- 80-90 Sand — gray, trace of clay; medium-grained, fairly well-sorted; 85-90% subangular quartz, 10-15% fresh glauconite; traces of muscovite and phosphorite; small amount of shell material - pelecypods, echinoid spines, and a few foraminifers
- 90-100 " slightly coarser and less glauconitic
- 100-110 Sand — gray, with greenish cast, trace of silt; fine- to medium-grained, well-sorted; about 85% clear to -greenish, angular-to-subangular quartz, and about 15% fresh glauconite; traces of muscovite, phosphorite, and shell material
- 110-120 "
- 120-130 "
- 130-140 "
- 140-150 Sand — gray, slightly silty and argillaceous; fine- to very-fine grained, well-sorted, angular to slightly sub-angular; about 5% glauconite; trace of shell material (megafossil fragments)
- 150-160 " a few foraminifers and ostracods
- 160-170 " very few microfossils
- 170-180 " moderately argillaceous, with small amount of medium sand, and a few foraminifers and small fish teeth

CALVERT FORMATION (180-260')

- 180-190 Sand — gray, clean; fine- to medium-grained, well-sorted, angular to subangular; 2-4% carbon-phosphatic shell fragments; and a trace of glauconite; large foraminifers moderately abundant, and a few megafossil shell fragments and ostracods
- 190-200 "
- 200-210 "
- 210-220 " a few more megafossil shell fragments, fewer foraminifers

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220-230 Sand — gray, very slightly silty and argillaceous; medium to very coarse grained, fairly well sorted, subangular to slightly rounded; scattered grains of glauconite and fragments of phosphatic shell; a few pelecypod shell fragments and a very few foraminifers

230-240 "

240-250 Sand — gray, moderately argillaceous; fine to very coarse grained, poorly sorted, subangular to rounded and polished; clear quartz, with about 5% oxidized (brown and light green) glauconite; small amounts of pyrite (much of it intergrown with glauconite) and brown phosphatic shell fragments; traces of garnet and epidote; about 5% pelecypod shell fragments, and scattered echinoid spines, foraminifers, ostracods, and fish teeth

250-260 "

MATTAPONI FORMATION (260-300')

260-270 Sand — dark gray, slightly argillaceous; medium to very coarse grained, moderately sorted; subequal amounts of subrounded to rounded, clear, greenish, and brownish quartz, and oxidized (brown) glauconite; traces of pyrite and phosphorite; scattered shell fragments and a very few foraminifers (Nonion, Siphogenerina).

270-280 " very slightly argillaceous

280-290 " moderately argillaceous; much of glauconite is unoxidized

290-300 " argillaceous (gray clay).

TUSCALOOSA FORMATION (300-380')

300-310 Sand — brownish-black, fairly clean; medium to coarse grained, well sorted; about 80% slightly oxidized, brownish-black glauconite, and about 15% quartz; about 5% of white, sandy limestone, grading into sandy phosphate/rock; small amounts of phosphorite and pink garnet; scattered pelecypod and gastropod shell fragments, fish teeth, and large foraminifers (Dentalina)

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- 310-320 Sand — brownish-black, fairly clean; medium to coarse grained, well sorted; about 80% slightly oxidized, brownish-black glauconite, and about 15% quartz; about 5% of white, sandy limestone grading into sandy phosphate/rock; small amounts of phosphorite and pink garnet; scattered pelecypod and gastropod shell fragments, fish teeth, and large foraminifers (Dentalina)
- 320-330 " argillaceous (gray clay), with only a trace of limestone
- 330-340 "
- 340-350 Sand — gray, argillaceous; coarse to very coarse grained, fairly well sorted; quartz, glauconite, and abraded shell fragments; a few foraminifers
- 350-360 "
- 360-370 " fewer shell fragments
- 370-380 "
- PATUXENT FORMATION (380-910')
- 380-390 Sand — buff, very slightly argillaceous; medium to coarse grained, well sorted, subangular to subrounded; small amounts of glauconite and muscovite; slightly arkosic
- 390-400 "
- 400-410 Sand — buff, clean; coarse to very coarse grained, well sorted, subrounded; slightly arkosic; minor muscovite and glauconite; trace of garnet
- 410-420 "
- 420-430 " light gray, very clean, arkosic
- 430-440 " buff, clean, arkosic
- 440-450 "
- 450-460 "
- 460-470 "

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470-480	Sand — gray, slightly to moderately argillaceous; medium to very coarse grained, fairly well sorted, sub-angular to subrounded; moderately arkosic; small amount of glauconite; traces of muscovite and garnet
480-490	"
490-500	" very slightly argillaceous
500-510	" very slightly argillaceous, coarser (about 10% granules)
510-520	"
520-530	" slightly argillaceous, coarser (about 5% granules)
530-540	"
540-550	"
550-560	"
560-570	"
570-580	"
580-590	"
590-600	"
600-610	"
610-620	"
620-630	"
630-640	"
640-650	"
650-660	"
660-670	" argillaceous, with a few very small pebbles
670-680	"
680-690	"
690-700	"

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700-710	Sand — gray, argillaceous; medium to very-coarse grained, fairly-well sorted, subangular to subrounded; moderately arkosic; small amount of glauconite; traces of muscovite and garnet; with a few very small pebbles
710-720	" slightly argillaceous
720-730	"
730-740	No sample
740-750	Sand — brownish gray, argillaceous; medium to very coarse grained, moderately sorted, subangular to subrounded; moderately arkosic; small amounts of muscovite and glauconite; trace of garnet
750-760	"
760-770	"
770-780	"
780-790	" moderately argillaceous
790-800	" slightly argillaceous
800-810	" "
810-820	" "
820-830	" argillaceous
830-840	" "
840-850	" moderately argillaceous
850-860	" "
860-870	" slightly argillaceous
870-880	" "
880-890	" "
890-900	" moderately argillaceous
900-910	" very slightly argillaceous
910-912	No sample

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GEOLOGIC SUMMARY

	<u>ROCK UNIT</u>	<u>AGE</u>
0-10	Columbia Group	Pleistocene
10-180	Yorktown Formation	Late Miocene
180-260	Calvert Formation	Middle Miocene
260-300	Mattaponi Formation	Paleocene
300-380	Tuscaloosa Formation	Late Cretaceous
380-910	Patuxent Formation	Early Cretaceous
910-912	No sample	

Virginia Division of Mineral Resources
Robert H. Teifke, Geologist
July 18, 1965