

OWNER: Commonwealth of Virginia  
(Division of Mineral Resources)  
DRILLER: Douglas & Dickinson, Inc.  
COUNTY: Lancaster (Kilmarnock)

VDMR: 1999  
WWCR: 98  
TOTAL DEPTH: 716'

GEOLOGIC LOG

Depth in feet

COLUMBIA GROUP (0-52')

- 1-10 Sand - pale-orange-brown, moderately clayey; medium-grained, moderately sorted, subangular to subrounded; feldspar present
- 10-21 Sand - orange, trace of clay (as grain coatings); medium-grained, very well-sorted, subangular to subrounded; minor weathered feldspar, weathered glauconite
- 21-31 " "
- 31-42 " 2-5% weathered pelecypod shell fragments
- 42-52 " "

YORKTOWN FORMATION (52-94')

- 52-63 Silt, Clay, Shell - grayish-brown; well-sorted, angular, coarse-grained silt and very fine-grained sand (40%), and brownish-gray, compact, moderately micaceous, pure clay (40%); 15% pelecypod shell fragments; 5% fine gravel (10-15mm.); slightly glauconitic and micaceous; limonitic, in part
- 63-73 " 5% pelecypod shell fragments, and a few phosphate nodules
- 73-84 No sample
- 84-94 Sand and Shell - dull brown, clayey; 30-40% coarse pelecypod shell fragments in matrix of multi-colored clays, silts, and sands (pure, purple clay; blue, clayey silt and fine-grained sand; brown clayey sand)

CALVERT FORMATION (94-220')

- 94-105 Silt and Clay - medium gray; silt (50-60%) is coarse grained, well sorted and angular; clay is gray, with greenish cast, and locally pure; slightly glauconitic; a few shell and plant fragments
- 105-115 " slightly sandy and micaceous

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- 115-126      Clays - light gray and pure, green and very silty, brown to black and sandy; a few shell and plant fragments; trace of glauconite
- 126-136      Clay - dark grayish-green, very silty and fine sandy; 10-15% shell fragments; very slightly glauconitic
- 136-147      Clay - light gray, with greenish cast, silty, trace of sand; very slightly glauconitic; a few shell fragments; moderately diatomaceous; a few foraminifers
- 147-157      Sand - medium gray, slightly-to-moderately clayey; very fine-to medium-grained, rather poorly-sorted; very slightly glauconitic; 5% shell fragments
- 157-168      "                    clayey and silty
- 168-178      Clay - light gray, with greenish cast, locally darker green and silty; very slightly glauconitic; diatomaceous; foraminifers abundant; plant fragments common
- 178-189      "                    a few shell fragments; foraminifers moderately abundant
- 189-199      Clay - medium-gray and grayish-green, subordinately dull purple; silty and sandy; sand is fine to coarse, rather poorly-sorted; very slightly glauconitic; 2-5% pelecypod shell fragments, and a very few foraminifers
- 199-210      Sand - dull-brown, very clayey, (limonitic, in part); fine-to very fine-grained, well sorted, angular; slightly glauconitic; 2-5% shell fragments, and a few foraminifers
- 210-220      "                    10% shell fragments

\*CHICKAHOMINY FORMATION(?) (220-241')

- 220-231      Sand - brownish-gray, slightly clayey(limonitic, in part); medium-to coarse-grained, fairly well-sorted, sub-angular to subrounded; clear quartz, with small amounts of phosphorite (nodules, bone fragments and shell fragments), weathered glauconite; 10% shell fragments, and a very few poorly-preserved foraminifers

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231-241 Sand - gray, speckled, very slightly clayey; medium-to coarse-grained, moderately sorted; 75% clear, subangular to sub-rounded quartz, and 25% fresh, rather poorly-sorted glauconite; trace of pyrite, a few shell fragments, foraminifers and ostracods

\*NANJEMOY and MATTAPONI FORMATIONS(?) (241-556')

241-252 Sand - tan, speckled, very slightly clayey; medium-to coarse-grained, fairly well-sorted; 65% clear to stained quartz; 35% variably-weathered glauconite; traces of pyrite and garnet; a few shell fragments and foraminifers; a few fragments of limestone

252-263 Sand - speckled, very slightly clayey, a few granules; coarse-to very coarse-grained, fairly well-sorted; 50% glauconite and goethite after glauconite; 50% rounded, stained quartz; a few pelecypod shell fragments and poorly-preserved microfossils

263-273 Sand-Silt - black, with greenish cast, moderately clayey; (dark-gray clay matrix) coarse-grained silt to fine-grained sand, well-sorted; 60% fresh glauconite, 40% green-tinted, angular quartz; slightly micaceous; abundant finely-divided shell material; foraminifers (very small forms) abundant

273-284 Silt - dark-gray clay matrix; coarse-grained silt to very fine-grained sand, very well sorted, angular; green-tinted quartz; slightly glauconitic, conspicuously micaceous, trace of shell material; very small foraminifers common, but not abundant

284-294 Silt-Sand - tan clay matrix; coarse-grained silt to fine-grained sand, well sorted; 50% angular quartz, clear to green-tinted; 50% fresh glauconite; 10% shell fragments; small foraminifers moderately abundant; very slightly micaceous

294-315 Sand-Silt - sparse matrix of brownish-gray clay, coarse-grained silt to fine-grained sand, well-sorted; subequal amounts fresh glauconite and angular quartz; a few shell fragments and small foraminifers; moderately micaceous

315-326 " 65% quartz, 35% glauconite

326-337 " 85% quartz, 15% glauconite

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- 337-347 Clay - greenish-gray and silty-sandy (80%) and orange-pink and silt-and-sand free (20%); silt-sand fraction is well sorted, glauconitic; slightly micaceous; a very few shell fragments and foraminifers
- 347-358 Clay - brownish-gray, very silty and sandy, locally limonitic; silt-sand fraction is fine, well-sorted, angular; moderately glauconitic, slightly micaceous; traces of pyrite and phosphatic shells; a few shell fragments and foraminifers
- 358-368 " "
- 368-379 " "
- 379-389 " "
- 389-399 Silt-Sand - brownish-gray, moderately clayey, locally limonitic; coarse-grained silt to fine-grained sand, well-sorted, angular; 10% glauconite; about 5 % phosphatic bone and shell; slightly micaceous; a few shell fragments and foraminifers
- 399-410 " "
- 410-420 " less than 2% glauconite
- 420-431 " 5-10% glauconite
- 431-441 " about 10% glauconite
- 441-452 Clay - subtly mottled (greenish-gray, dark-gray, bluish-gray, and brown), very silty; 5% orange-pink pure clay; silt is very very slightly glauconitic and micaceous; a few shell fragments
- 452-463 Sand - brown, speckled, trace of clay; medium-to coarse-grained, fairly well-sorted; 75% fresh-to-decomposed glauconite, 25% stained, rounded quartz; traces of pyrite and bone phosphorite; a very few shell fragments and foraminifers
- 463-473 " "
- 473-484 Sand - light gray, speckled, trace of clay; medium grained, fairly well-sorted; 70% clear, subangular-to slightly-sub-rounded quartz; 30% fresh glauconite; minor pyrite, garnet and bone phosphorite; a few shell fragments; foraminifers common

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- 484-494 Sand - light gray, speckled, trace of clay; medium grained, fairly well-sorted; 70% clear, subangular-to slightly-sub-rounded quartz; 30% fresh glauconite; minor pyrite, garnet and bone phosphorite; a few shell fragments; foraminifers common
- 494-510 Sand - brownish-gray, slightly clayey, a few granules; medium-to very coarse-grained, moderately sorted; 60% glauconite and goethite after glauconite; 40% stained, rounded quartz; a few shell fragments and foraminifers
- 510-521 " "
- 521-531 Sand - medium-gray, slightly clayey; fine-to medium-grained, fairly well-sorted; 50% angular, clear quartz, 50% fresh-to slightly-decomposed glauconite; traces of pyrite, feldspar, garnet and limestone; a few foraminifers
- 531-546 " "
- 546-556 Sand - brownish-gray, trace of clay; medium to coarse-grained, fairly well-sorted; 50% fresh-to-decomposed glauconite; 50% stained, rounded quartz; a very few shell fragments and foraminifers

MATTAPONI FORMATION(556-666')

- 556-566 Sand - dark gray, slightly to moderately clayey; medium grained, fresh-to slightly-decomposed glauconite with subordinate quartz; a few ostracods foraminifers (globigerinids noted)
- 566-576 " "
- 576-586 " "
- 586-596 " "
- 596-606 " "
- 606-616 " "
- 616-626 " very slightly feldspathic; Nodosaria and Robulus noted
- 626-636 " "

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- 636-646 Sand - dark gray, speckled; medium grained, fairly well-sorted; 50% glauconite, 50% clear to green-tinted, angular to subangular quartz; a few foraminifers and shell fragments
- 646-656 " medium-to coarse-grained, rather poorly-sorted
- 656-666 Sand - gray, speckled, slightly clayey; fine-to coarse-grained, rather poorly-sorted; subequal amounts of glauconite and clear, angular to subrounded quartz; coarse fraction contains some fresh feldspar; traces of garnet and hematite; a few foraminifers

PATUXENT FORMATION (666-716')

- 666-676 Sand - tan, clear, 5% granules; coarse-to very coarse-grained, well sorted, subangular to subrounded; 5% fresh glauconite; very feldspathic; small amounts of garnet and hematite
- 676-686 " "
- 686-696 " medium-to very coarse-grained, moderately sorted; about 10% glauconite; minor muscovite
- 696-706 " "
- 706-716 " "

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GEOLOGIC SUMMARY

	<u>Rock Unit</u>	<u>Age</u>
0-52	Columbia Group	Pleistocene
52-94	Yorktown Formation	Late Miocene
94-220	Calvert Formation	Middle Miocene
220-241	Chickahominy Formation(?)	Late Eocene
241-556	Nanjemoy & Mattaponi Formations (?)	Middle Eocene and Paleocene
556-666	Mattaponi Formation	Paleocene
666-716	Patuxent Formation	Early Cretaceous

Virginia Division of Mineral Resources  
Robert H. Teifke, Geologist  
October 2, 1967

\* Washed samples from several intervals were compared to corresponding intervals from another well at Kilmarnock; no correlation exists between the two. Moreover, the samples from the other Kilmarnock well correlate with those from nearby wells at Whitestone, Lively, Palmer, Irvington, etc. This is considered a very poor and unreliable set of samples.