OWNER: Scovill (Cosmetic Container Div.) VDMR: 1548
DRILLER: Sydnor Pump & Well Co., Inc. WWCR: 152
COUNTY: Westmoreland (Montross) TOTAL DEPTH: 817'

GEOLOGIC LOG

COLUMBIA GROUP (0-40')

0-10	Sand — light-brown, very argillaceous; medium-grained, rather poorly sorted, subrounded; moderately feldspathic
10-20	Sand — orange-brown, slightly argillaceous; medium- to coarse-grained, fairly well sorted, subangular to subrounded; moderately arkosic (slightly decomposed white to yellowish potassic feldspar)
20-30	Sand — brown, moderately argillaceous, a few granules; medium- to coarse-grained, moderately sorted, subangular to subrounded; moderately arkosic; some ferricrete cementation of sand grains
30-40	Sand — gray, clean, a few granules; medium- to very-coarse-grained, fairly well sorted, subrounded; small amounts of moderately decomposed potassic feldspar and glauconite, gray to brown nodular phosphorite, and magnetite; "blue" quartz common; traces of garnet and brown epidote

CALVERT FORMATION (40-280')

40-50	Clay and Sand — gray; a very few, very small rounded pebbles (2-5 mm); about 50% gray clay; about 50% sand; very-fine- to very-coarse-grained, poorly sorted, variably rounded (roundness increases as grain size); traces of muscovite and potassic feldspar; much of clay is either sand-free or contains fine, well-sorted sand
50-60	Sand — gray, slightly to moderately argillaceous; fine-grained, well-sorted, subangular; small amounts of muscovite and hornblende; traces of shell, phosphorite, pyrite, epidote, and garnet
60-70	" moderately argillaceous
70-80	" "

OWNER: Scovill (Cosmetic Container Div.) #1548

80-90	Clay — light-gray, moderately silty
90-100	" "
100-110	Sand and Clay — brownish-gray; 30-35% gray clay; 65-70% sand; fine-grained, well-sorted, angular to subangular; small amount fine-grained platey to nodular phosphorite
110-120	"
120-130	"
130-140	Sand — greenish-gray, very argillaceous; fine-grained, well-sorted, angular to subangular; about 10% chalky and phosphatic pelecypod shell fragments, and a few echinoid spines and bone fragments, moderately diatomaceous
140-150	" "
150-160	" "
160-170	" "
170-180	Sand and Clay — gray, a few granules and very small pebbles; 30-40% gray to brownish-gray clay; 60-70% sand; fine- to coarse-grained, poorly sorted, variably rounded; small amounts plately and nodular phosphorite, and acicular aragonite; trace of glauconite; small amount of chalky pelecypod shell debris; moderately diatomaceous
180-190	" "
190-200	" clay is browner, limonitic; very slightly diatomaceous
200-210	Clay — gray, very sandy, a few granules and very small pebbles; sand fine- to coarse-grained, rather poorly sorted, subangular to subrounded; small amount of platey phosphorite; traces of glauconite and garnet; a few foraminifers, pelecypod shell fragments, and echinoid spines; slightly diatomaceous
210-220	" very few shell fragments

OWNER: Scovill (Cosmetic Container Div.) #1548

220-230 Clay — gray, slightly silty and sandy; a few foraminifers; diatomaceous (moderately)

230-240 "

240-250 Sand — brownish-gray, very argillaceous, a few quartz granules; very-fine- to medium-grained, moderately sorted, angular to subrounded; brown and black, platey and nodular phosphorite moderately abundant (2-5%); traces of glauconite, acicular aragonite, and pink garnet; 2-5% chalky and phosphatic pelecypod shell fragments, a few echinoid spines, and a few foraminifers and diatoms

250-260 Sand — grayish-brown, very argillaceous; fine- to very-coarse-grained, poorly sorted, variably rounded; a few chalky and phosphatic pelecypod shell fragments; trace of glauconite; slightly to moderately diatomaceous

260-270 "

270-280 "

NANJEMOY FORMATION (280-340')

280-290 Shell Sand — gray, moderately argillaceous; 5-10% consists of shell fragments larger than 2 mm (gravel size); sand size fraction fine- to very-coarse-grained, moderately sorted (skewed coarse), subangular to rounded; 50-60% shell fragments and fragments of quartz-glauconite-bearing limestone, 40-50% quartz, and about 5% fresh black glauconite; shell fragments are abraded, medium- to very-coarse-grained; quartz-glauconite fraction fine- to coarse-grained; traces of epidote and garnet; shell material mostly pelecypods, with some echinoid spines and plates, scaphopods, and encrusting and branching bryozoans; rather poorly preserved foraminifers moderately abundant; a very few ostracods; small amounts brown and gray phosphorite present as shell fragments and fine nodules

290-300 " much more glauconitic (15-25%)

300-310 "

OWNER: Scovill (Cosmetic Container Div.) #1548

310-320 Sand — brownish-gray ("salt-and-pepper"), moderately argillaceous, about 5% granules (mostly quartz, a few of phosphorite); fine- to very-coarse-grained, moderately sorted (concentration in medium sand range), subangular to well-rounded; coarser material (0.5-4.0 mm) well rounded, polished; much of quartz is stained yellow or green; 50-60% fresh (black) to moderately oxidized (yellowish-green to yellow, to brown) glauconite, concentrated in the finer fractions; minor amounts of nodular to platey phosphorite and quartz-glauconite-bearing limestone; small amounts muscovite, brown and green epidote, pyrite, garnet; about 5% coarse pelecypod shell debris; a few foraminifers and echinoid spines, and scattered ostracods and shark teeth and vertebrae

320-330 " finer-grained (concentration in fine sand range), better sorted, more glauconitic (about 20%)

330-340 " "

MATTAPONI FORMATION (340-560')

340-350 Sand — brownish-gray ("salt-and-pepper"), moderately argillaceous, about 5% granules (mostly quartz, a few of phosphorite); fine- to very-coarse-grained, moderately sorted (concentration in medium sand range), subangular to well-rounded; coarser material (0.5-4.0 mm) well rounded, polished; much of quartz is stained yellow or green; 50-60% fresh (black) to moderately oxidized (yellowish-green to yellow, to brown) glauconite; minor amounts of nodular to platy phosphorite and quartz-glauconite-bearing limestone; about 5% coarse pelecypod shell debris; a few foraminifers and echinoid spines, and scattered ostracods and shark teeth and vertebrae

350-360 " more glauconitic (70-80%)

360-370 Sand - dark-greenish-gray ("salt-and-pepper"), slightly argillaceous; about 60% medium-grained, well-sorted, fresh glauconite; about 40% fine- to coarse-grained, fairly well sorted (skewed coarse), angular to rounded, clear to green-stained quartz; traces of pyrite, muscovite, phosphorite, and shell; a few foraminifers

370-380 " 50% quartz, 50% glauconite

380-390 " 20-25% quartz, 75-80% glauconite

OWNER: Scovill (Cosmetic Container Div.) #1548

390-400	Sand - brownish-gray (salt-and-pepper), slightly argillaceous; fine- to very coarse-grained, rather poorly sorted, angular to rounded; about 40% fresh glauconite, and about 10% slightly decomposed potassic feldspar (microcline); quartz and feldspar concentrated in finer fractions; limonitic stain common on quartz and feldspar; small amounts pyrite and brown chert; traces of brown epidote, reddish-brown rutile, phosphorite, and shell; a few echinoid spines
400-410	" more glauconitic (about 60%)
410-420	" slightly to moderately argillaceous (pink clay) and with about 5% gravel (granules, very small pebbles, and shell fragments)
420-430	Sand - brown, with greenish cast, ("salt-and-pepper"), slightly argillaceous; medium- to coarse-grained, fairly well sorted; about 50% clear to yellowish to brownish, sub-rounded to rounded and polished quartz; about 50% dark-green to yellowish-green to brown glauconite (various stages of oxidation)
430-440	"
440-450	"
450-460	Sand - gray ("salt-and-pepper"), slightly argillaceous; medium- to coarse-grained, well sorted, subangular to rounded; subequal amounts of clear to yellow- and green-stained quartz, and greenish-black to light-green glauconite; scattered grains of muscovite, epidote, and garnet; a few foraminifers
460-470	"
470-480	*Sand - gray ("salt-and-pepper"), slightly to moderately argillaceous, fine- to coarse-grained, fairly well-sorted; 15-20% fragments of quartz-glauconite-bearing limestone; subequal amounts of subangular to rounded, clear to yellow-stained quartz, and dark-green to yellowish to brown glauconite (various oxidation states); aquia foraminifers moderately abundant; several types of bryozoans; scattered pelecypod shell fragments, shark teeth, and large echinoid spines

* Microfossil slides prepared

OWNER: Scovill (Cosmetic Container Div.) #1548

480-490 Sand - black, very slightly argillaceous; medium- to coarse-grained, fairly well sorted; 75-85% predominantly fresh black glauconite; 15-25% subrounded quartz; a few limestone fragments; a few pelecypod shell fragments; shark teeth, bryozoa, ostracods, echinoid spines, and worm tubes; small per cent foraminifers in finest fraction, and scattered, large Aquia foraminifers in coarsest fraction

490-500 " 50% quartz, 50% glauconite

500-510 " "

510-520 Sand - gray ("salt-and-pepper"), slightly argillaceous; fine- to coarse-grained, fairly well sorted; about 50% fresh black glauconite, and about 50% angular to subrounded, clear to yellow to brown quartz; coarsest quartz well rounded and polished; traces of pyrite, muscovite; small amount of quartz-glauconite-bearing limestone; scattered pelecypod shell fragments, ostracods, bryozoa, shark teeth, echinoid spines, worm tubes; foraminifers very abundant in finest fraction, and scattered large Aquia foraminifers in coarsest fraction

520-530 Sand - gray ("salt-and-pepper"), slightly argillaceous; fine- to coarse-grained, fairly well sorted; about 50% fresh black glauconite, and about 50% angular to subrounded, clear to yellow to brown quartz; coarsest quartz well rounded and polished; traces of pyrite, muscovite; small amount of quartz-glauconite-bearing limestone; scattered pelecypod shell fragments, ostracods, bryozoa, shark teeth, echinoid spines, worm tubes; foraminifers very abundant in finest fraction, and scattered large Aquia foraminifers in coarsest fraction

530-540 " about 60% glauconite

540-550 Sand - brownish-gray ("salt-and-pepper"), slightly argillaceous; fine- to coarse-grained, moderately sorted (concentration in medium sand range); about 50% black to yellowish-brown glauconite, and about 50% variably rounded, clear to yellow to brown quartz; small amount of quartz-glauconite-bearing limestone; scattered pelecypod shell fragments, ostracods, shark teeth, echinoid spines, worm tubes, and large Aquia foraminifers; small foraminifers moderately abundant in finest sand fraction

550-560 " most of glauconite is unoxidized

OWNER: Scovill (Cosmetic Container Div.) #1548

PATUXENT FORMATION (560-817')

560-570	Sand - light-brownish-gray, trace of clay; medium- to coarse-grained, well-sorted, subangular to subrounded; about 5% fresh glauconite; moderately arkosic; traces of muscovite and garnet; a few foraminifers
570-580	" about 10% glauconite, a few pelecypod shell fragments
580-590	" about 20% glauconite
590-600	" about 10% glauconite
600-610	" "
610-620	Sand - brownish-gray, trace of clay; medium- to coarse-grained, well-sorted, subangular; slightly to moderately arkosic; about 2% fresh glauconite; traces of garnet and muscovite
620-630	Sand - brownish-gray ("salt-and-pepper"), slightly to moderately argillaceous; medium- to coarse-grained, fairly well sorted; quartz and glauconite
630-640	"
640-650	"
650-660	"
660-670	" 5-10% glauconite, 90-95% quartz
670-680	Sand - brown, moderately argillaceous; less than 5% each of feldspar and glauconite
680-690	Sand - brownish-gray, trace of clay; coarse, slightly to moderately rounded; small amounts feldspar and glauconite
690-700	Sand - gray, slightly silty and argillaceous; medium-grained, well-sorted, subangular to subrounded; slightly arkosic; about 2% glauconite
700-710	Sand - brown, slightly argillaceous; coarse- to very-coarse-grained, fairly well sorted, subrounded; scattered grains of feldspar

OWNER: Scovill (Cosmetic Container Div.) #1548

710-720	Sand - brownish-gray, slightly argillaceous; fine- to coarse-grained, rather poorly sorted, subrounded; 20% fresh glauconite; 10% iron-stained feldspar
720-730	" coarser, more glauconitic, less feldspathic
730-740	Clay - brownish-gray; sandy; sand glauconitic, moderately feldspathic
740-750	Clay - mottled browns and grays, very sandy; sand poorly sorted, poorly rounded; arkosic and glauconitic
750-760	"
760-770	"
770-780	"
780-790	"
790-800	"
800-810	Sand - gray, slightly argillaceous; coarse- to very-coarse-grained, fairly well sorted, subangular to subrounded; arkosic; traces of glauconite and muscovite
810-817	"

GEOLOGIC SUMMARY

	Rock Unit	Age
0-40'	Columbia Group	Pleistocene
40-280'	Calvert Formation	Middle Miocene
280-340'	Nanjemoy Formation	Middle Eocene
340-560'	Mattaponi Formation	Paleocene
560-817'	Patuxent Formation	Early Cretaceous

Virginia Division of Mineral Resources
Robert H. Teifke, Geologist
April 22, 1966