INTERVAL SHEET

WWCR 155

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VDMR WELL NO.: Well No. 1197

Date 12/14/64

Sample Interval: from 0 to 250

PROP: Bogese Const. Co. (Beechwood Manor)

Total Depth 250

COMP: Mitchell's W & P Co.

Oil ____ Gas ____ Water X Exploratory ____

COUNTY: Prince George (Hopewell)

Cuttings X Core ____ Other ____

VDMR WELL NO: W-1197

From-To	From-To	From-To	From-To	From-To
-	0 - 10	-	-	-
-	10 - 20	-	-	-
-	20 - 30	-	-	-
-	30 - 40	-	No washed samples	-
-	40 - 50	-	-	-
-	50 - 60	-	-	-
-	60 - 70	-	-	-
-	70 - 80	-	-	-
-	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	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

OWNER: Bogese Construction Company, Inc. VDMR #1197
DRILLER: Mitchell's Well & Pump Company WWCR #155
COUNTY: Prince George TOTAL DEPTH: 250'

GEOLOGIC LOG

Columbia Group (0-40')

0-10	Sand - orangeish-brown, argillaceous, fine to medium grained, fairly well sorted, subangular to subrounded, slightly arkosic (white, weathered microcline).
10-20	Sand - orangeish-brown, argillaceous, moderate amount small gravel (up to 15 mm) composed of subangular to subrounded quartz, sand medium to very coarse grained, fairly well sorted, subangular to subrounded, slightly arkosic (white, weathered microcline), grayish quartz common, traces of muscovite and epidote, some plant material.
20-30	Sand - orangeish-brown, moderately argillaceous, moderate amount small gravel (up to 15 mm) composed of subangular to subrounded quartz and a few sandstone and quartzite rock fragments, sand is very fine to very coarse grained, poorly sorted, subangular to subrounded, slightly arkosic (white, weathered microcline), grayish quartz common, traces of muscovite and epidote.
30-40	Sand - brown, as above, but with less gravel.

Nanjemoy Formation (40-90')

40-50	Clay - gray, calcareous, sandy, sand is poorly sorted, glauconitic in the fine grades, and contains a small amount of well rounded, limpid quartz, small amount of nodular phosphate, trace of garnet, very fossiliferous (extremely abundant ostracods, abundant foraminifera and echinoid spines, and smaller amount of fine and coarse abraded pelecypod fragments.)
50-60	Sand - black, with greenish cast, very argillaceous, consists of fine grained, well sorted glauconite (65-75%) and more poorly sorted, angular to subangular quartz (25-35%), much of quartz is stained green, small amounts of muscovite and nodular phosphate, trace of very fine grained pyrite, small amount abraded pelecypod shell fragments, and scattered echinoid spines.

60-70	Clay - dark gray, sandy, sand consists of poorly sorted black to dark green glauconite and yellow and green stained quartz, abundant muscovite, small amounts phosphate and pyrite, abundant abraded shell fragments (pelecypods) and a few ostracods and foraminifera, some plant material.
70-80	Sand - dark gray, very argillaceous, very fine to medium grained, well sorted, angular to rounded, black to dark green glauconite (65-75%), angular quartz (25-35%), abundant muscovite, trace of pyrite, small amount of abraded shell fragments (pelecypods).
80-90	Clay - brownish gray, moderately sandy, sand is glauconitic and micaceous (muscovite).

Matta poni
~~Aquia~~ Formation (90-140')

90-100	Sand - dark gray, extremely argillaceous, consists of fine grained, well sorted glauconite (70-80%) and angular to subangular quartz (20-30%), abundant muscovite, abundant foraminifera (mostly Robulus), moderate amount of abraded shell fragments (pelecypods), a few gastropods and ostracods.
100-110	Sand - black with greenish cast, argillaceous, consists of fine to medium grained, fairly well sorted green and black glauconite (50-60%) and very fine to fine grained, angular to subangular, green-stained quartz (40-50%), abundant muscovite, a few foraminifera and abraded pelecypod fragments.
110-120	Clay - dark gray, extremely sandy, sand consists of fine grained, well sorted glauconite (about 50%), quartz, and abundant muscovite, small amounts of indurated pink clay and calcite cement, very abundant, comminuted, white, chalky shell material (pelecypods, some gastropods, including Turitella).
120-130	Sand - very dark gray, very argillaceous, very glauconitic, micaceous (muscovite), trace of garnet, moderate amount of comminuted, white, chalky shell material (pelecypods), moderately abundant foraminifera (Valvulineria).
130-140	Sand - black, argillaceous, consists of fine to medium grained, well sorted glauconite (75-80%) and angular quartz (20-25%), micaceous (muscovite), small amount comminuted, white, chalky shell material, some foraminifera.

OWNER: Bogese Construction Company, Inc. (Continued) #1197

Potomac Group (140-250')

140-150	Sand - gray, slightly silty and argillaceous, abundant small gravel (up to 10 mm) composed of subrounded to rounded yellow, green, and clear quartz, and some feldspar pebbles, sand very fine to very coarse grained, rather poorly sorted, but strongly skewed to the coarsest grades, angular to subangular, arkosic (fresh to slightly altered, white and gray microcline, much of which contains abundant included glauconite), quartz includes yellow, green, milky, clear, and amethystine types, and clear grains contain abundant globular, opague inclusions, glauconitic (fine grained, well sorted, restricted to finer grades), small amounts muscovite and pink garnet, scattered phosphate nodules, trace of pyrite, scattered, abraded shell fragments (pelecypods).
150-160	Sand - light gray, slightly silty and argillaceous, coarse to very coarse grained, well sorted, angular to subangular, trace of small gravel, quartz milky to clear with opague inclusions, very arkosic (fresh, white and gray microcline, slightly more rounded than quartz), slightly glauconitic (fine to medium grained), traces of epidote, pink garnet, and pyrite.
160-170	Sand - light gray, moderately argillaceous, coarse to very coarse grained, well sorted, angular to subangular, small amount very small quartz gravel, arkosic (fresh, white and gray microcline), small amounts of pink and orange garnet, epidote, and pyrite.
170-180	Sand - gray, with orange cast, very slightly argillaceous, coarse to very coarse grained, well sorted, angular to subangular, small amount very small, subangular quartz granules, arkosic (fresh, white and gray microcline, slightly more rounded than quartz), quartz clear to milky to pale orange, relatively abundant pink and orange garnet, small amounts of epidote, pyrite, tourmaline, and muscovite, trace of glauconite.
180-190	As above.
190-200	Sand - buff, with greenish cast, moderately argillaceous, medium grained, well sorted, angular to subangular, arkosic (alteration of feldspar to yellowish clay is far advanced), small amounts of epidote, garnet, muscovite, trace of kyanite.

200-210	Sand - buff, very slightly argillaceous, medium grained, well sorted, angular to subangular, arkosic (white to yellow, relatively fresh microcline), small amount muscovite, traces of epidote, garnet, and glauconite.
210-220	Sand - buff, coarse grained, very well sorted, angular to subangular, arkosic (fresh, white, subangular microcline), small amounts muscovite and epidote.
220-230	Sand - buff, coarse to very coarse grained, well sorted, subangular, small amount subangular quartz granules, very arkosic (fresh to slightly decomposed, white to yellow, subangular to subrounded microcline), scattered lumps of variegated clay, trace of epidote.
230-240	Sand - gray, very slightly argillaceous, medium to very coarse grained, fairly well sorted, angular to subangular, arkosic (fresh, white feldspar), abundant, variegated clay in form of rounded, sand-size grains, traces of garnet, epidote, muscovite, kyanite, graphite, pyrite, glauconite.
240-250	Sand - light gray, coarse to very coarse grained, well sorted, angular to subangular, small amount subangular to subrounded, quartz and feldspar granules and very small pebbles, arkosic (fresh, white feldspar), quartz clear, glassy, small amount epidote, trace garnet.

GEOLOGIC SUMMARY

	ROCK UNIT	AGE
0-40	Columbia group	Miocene
40-90	Nanjemoy formation	Eocene
90-140	Mattaponi ~~Aquia~~ formation	Eocene
140-250	Potomac group	Lower Cretaceous

Virginia Division of Mineral Resources
Robert H. Teifke, Geologist
December 30, 1964

OWNER: Bogese Construction Company, Inc.
DRILLER: Mitchell's Well & Pump Company
COUNTY: Prince George

VDMR #1197
WWCR #155
TOTAL DEPTH: 250'

GEOLOGIC LOG

Columbia Group (0-40')

0-10	Sand - orangeish-brown, argillaceous, fine to medium grained, fairly well sorted, subangular to subrounded, slightly arkosic (white, weathered microcline).
10-20	Sand - orangeish-brown, argillaceous, moderate amount small gravel (up to 15 mm) composed of subangular to subrounded quartz, sand medium to very coarse grained, fairly well sorted, subangular to subrounded, slightly arkosic (white, weathered microcline), grayish quartz common, traces of muscovite and epidote, some plant material.
20-30	Sand - orangeish-brown, moderately argillaceous, moderate amount small gravel (up to 15 mm) composed of subangular to subrounded quartz and a few sandstone and quartzite rock fragments, sand is very fine to very coarse grained, poorly sorted, subangular to subrounded, slightly arkosic (white, weathered microcline), grayish quartz common, traces of muscovite and epidote.
30-40	Sand - brown, as above, but with less gravel.

Nanjemoy Formation (40-90')

40-50	Clay - gray, calcareous, sandy, sand is poorly sorted, glauconitic in the fine grades, and contains a small amount of well rounded, limpid quartz, small amount of nodular phosphate, trace of garnet, very fossiliferous (extremely abundant ostracods, abundant foraminifera and echinoid spines, and smaller amount of fine and coarse abraded pelecypod fragments.)
50-60	Sand - black, with greenish cast, very argillaceous, consists of fine grained, well sorted glauconite (65-75%) and more poorly sorted, angular to subangular quartz (25-35%), much of quartz is stained green, small amounts of muscovite and nodular phosphate, trace of very fine grained pyrite, small amount abraded pelecypod shell fragments, and scattered echinoid spines.

OWNER: Bogese Construction Company, Inc. (Continued)

60-70	Clay - dark gray, sandy, sand consists of poorly sorted black to dark green glauconite and yellow and green stained quartz, abundant muscovite, small amounts phosphate and pyrite, abundant abraded shell fragments (pelecypods) and a few ostracods and foraminifera, some plant material.
70-80	Sand - dark gray, very argillaceous, very fine to medium grained, well sorted, angular to rounded, black to dark green glauconite (65-75%), angular quartz (25-35%), abundant muscovite, trace of pyrite, small amount of abraded shell fragments (pelecypods).
80-90	Clay - ~~brownish gray,~~ pink ~~moderately sandy, sand is~~ slightly glauconitic and micaceous (muscovite).

M.
~~Aquia~~ Formation (90-140')

90-100	Sand - dark gray, extremely argillaceous, consists of fine grained, well sorted glauconite (70-80%) and angular to subangular quartz (20-30%), abundant muscovite, abundant foraminifera (mostly Robulus), moderate amount of abraded shell fragments (pelecypods), a few gastropods and ostracods.
100-110	Sand - black with greenish cast, argillaceous, consists of fine to medium grained, fairly well sorted green and black glauconite (50-60%) and very fine to fine grained, angular to subangular, green-stained quartz (40-50%), abundant muscovite, a few foraminifera and abraded pelecypod fragments
110-120	Clay - dark gray, extremely sandy, sand consists of fine grained, well sorted glauconite (about 50%), quartz, and abundant muscovite, small amounts of indurated pink clay and calcite cement, very abundant, comminuted, white, chalky shell material (pelecypods, some gastropods, including Turitella).
120-130	Sand - very dark gray, very argillaceous, very glauconitic, micaceous (muscovite), trace of garnet, moderate amount of comminuted, white, chalky shell material (pelecypods), moderately abundant foraminifera (Valvulineria).
130-140	Sand - black, argillaceous, consists of fine to medium grained, well sorted glauconite (75-80%) and angular quartz (20-25%), micaceous (muscovite), small amount comminuted, white, chalky shell material, some foraminifera.

OWNER: Bogese Construction Company, Inc. (Continued)

Potomac Group (140-250')

140-150 Sand - gray, slightly silty and argillaceous, abundant small gravel (up to 10 mm) composed of subrounded to rounded yellow, green, and clear quartz, and some feldspar pebbles, sand very fine to very coarse grained, rather poorly sorted, but strongly skewed to the coarsest grades, angular to subangular, arkosic (fresh to slightly altered, white and gray microcline, much of which contains abundant included glauconite), quartz includes yellow, green, milky, clear, and amethystine types, and clear grains contain abundant globular, opague inclusions, glauconitic (fine grained, well sorted, restricted to finer grades), small amounts muscovite and pink garnet, scattered phosphate nodules, trace of pyrite, scattered, abraded shell fragments (pelecypods).

Tm 0 0 0 0 145 (8-71)
Kptx 0 0 0

150-160 Sand - light gray, slightly silty and argillaceous, coarse to very coarse grained, well sorted, angular to subangular, trace of small gravel, quartz milky to clear with opague inclusions, very arkosic (fresh, white and gray microcline, slightly more rounded than quartz), slightly glauconitic (fine to medium grained), traces of epidote, pink garnet, and pyrite.

C-VC
V.F ic

160-170 Sand - light gray, moderately argillaceous, coarse to very coarse grained, well sorted, angular to subangular, small amount very small quartz gravel, arkosic (fresh, white and gray microcline), small amounts of pink and orange garnet, epidote, and pyrite.

170-180 Sand - gray, with orange cast, very slightly argillaceous, coarse to very coarse grained, well sorted, angular to subangular, small amount very small, subangular quartz granules, arkosic (fresh, white and gray microcline, slightly more rounded than quartz), quartz clear to milky to pale orange, relatively abundant pink and orange garnet, small amounts of epidote, pyrite, tourmaline, and muscovite, trace of glauconite.

180-190 As above.

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OWNER: Bogese Construction Company, Inc. (Continued)

200-210	Sand - buff, very slightly argillaceous, medium grained, well sorted, angular to subangular, arkosic (white to yellow, relatively fresh microcline), small amount muscovite, traces of epidote, garnet, and glauconite.
210-220	Sand - buff, coarse grained, very well sorted, angular to subangular, arkosic (fresh, white, subangular microcline), small amounts muscovite and epidote.
220-230	Sand - buff, coarse to very coarse grained, well sorted, subangular, small amount subangular quartz granules, very arkosic (fresh to slightly decomposed, white to yellow, subangular to subrounded microcline), scattered lumps of variegated clay, trace of epidote.
230-240	Sand - gray, very slightly argillaceous, medium to very coarse grained, fairly well sorted, angular to subangular, arkosic (fresh, white feldspar), abundant, variegated clay in form of rounded, sand-size grains, traces of garnet, epidote, muscovite, kyanite, graphite, pyrite, glauconite.
240-250	Sand - light gray, coarse to very coarse grained, well sorted, angular to subangular, small amount subangular to subrounded, quartz and feldspar granules and very small pebbles, arkosic (fresh, white feldspar), quartz clear, glassy, small amount epidote, trace garnet.

GEOLOGIC SUMMARY

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