INTERVAL SHEET

WWCR 82

Page 1

VDMR Well No.: 1388

Date 10/8/65

Sample Interval: from 0 to 525

PROP: Son's Inc.
(Blue Star Estates # 2)

Total depth 525

COMP: Sydnor P & W Co.

Oil ___ Gas ___ Water X Exploratory ___

COUNTY: Hanover (Atlee)
VDMR WELL NO: W-1388

Cuttings X Core ___ Other ___

WASHED SAMPLES

From-To		From-To	From-To		From-To
0 - 10		-	300 -326	No Sample	-
10 - 20		-	326 -336		-
20 - 30		-	336 -346		-
30 - 40		-	346 -356		-
40 - 50		-	356 -366		-
50 - 60		-	366 -376		-
60 - 70		-	376 -386		-
70 - 80		-	386 -400		-
80 - 90		-	400 -410		-
90 - 100		-	410 -420		-
100 - 110		-	420 -430		-
110 - 120		-	430 -440		-
120 - 130		-	440 -450		-
130 - 140		-	450 -460		-
140 - 150		-	460 -470		-
150 - 160		-	470 -480		-
160 - 170		-	480 -490		-
170 - 180		-	490 -500		-
180 - 190	No Sample	-	500 -510		-
190 - 200		-	510 -525		-
200 - 210		-	-		-
210 - 220		-	-		-
220 - 230		-	-		-
230 - 240		-	-		-
240 - 250		-	-		-
250 - 260		-	-		-
260 - 270		-	-		-
270 - 280		-	-		-
289 - 290		-	-		-
290 - 300		-	-		-

OWNER: Son's Inc. (Blue Star Estates # 2)
DRILLER: Sydnor Pump & Well Co., Inc.
COUNTY: Hanover (Atlee)

VDMR WELL # 1388
WWCR WELL # 82
TOTAL DEPTH : 525

GEOLOGIC LOG

Columbia Group (0-50')

0-10	Sand - orange-brown, slightly silty and argillaceous; medium-to coarse-grained, moderately sorted, subangular to subrounded; slightly feldspathic (dull white feldspar); traces of glauconite, muscovite, iron oxides.
10-20	Sand - buff, clean; medium-to coarse-grained, well-sorted, subangular to subrounded; slightly feldspathic (dull white feldspar); traces of glauconite, muscovite, iron oxides, epidote, rutile, kyanite.
20-30	As above - but with small amount very coarse-grained, poorly sorted, sand, and with a few grains of gray chert.
30-40	Sand - buff, clean medium-to very-coarse-grained, moderately sorted, subangular to subrounded; moderately feldspathic (white, friable feldspar); scattered grains of gray chert.
	Note: 0-40' interval contains relatively abundant accessory mineral suite, well-rounded, and dominated by rutile; kyanite and epidote also present.
40-50	Sand - brown; medium-to very-coarse-grained, moderately sorted, subangular to rounded; abundant white feldspar; small amount ferricrete; small amount silty gray clay.

Calvert Formation (50-60')

50-60	Sand - medium-gray, argillaceous (gray clay with abundant finely divided muscovite); bimodal sand; fine-grained, well-sorted, angular to subangular (80%); coarse-grained, moderately sorted, subrounded (20%); abundant white and gray feldspar, traces of glauconite, zircon, epidote, phosphorite.

Pamunkey Group (60-240')

60-70	Sand - gray, moderately argillaceous, about 10% granules; bimodal sand: fine-grained, well sorted, angular to sub-angular (50%); very-coarse-grained, well-sorted, subangular to rounded (50%); some feldspar; traces of epidote, zircon, hornblende, phosphorite; small amount shell debris (pelecypods and gastropods).
70-80	As above

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80-90	Sand and Gravel - gray, very argillaceous; fine-to very-fine-grained, well-sorted, angular to subangular; gravel fraction (25%) consists of well-sorted, subrounded to rounded granules (2-4 mm); small amounts feldspar, phosphorite; moderate amount shell debris (pelecypods and gastropods, including Turritella).
90-100	As above - but gravel is slightly coarser (2-6 mm).
100-110	Sand - gray, very argillaceous; fine-grained, moderately sorted, poorly rounded; scattered granules and shell fragments; feldspar present; traces epidote, hornblende, and glauconite.
110-120	Sand and Gravel - gray, argillaceous; fine-to very-coarse-grained; poorly sorted, variably rounded; gravel fraction (10-15%) consists of small, rounded pebbles (2-8 mm); small amount of feldspar; scattered grains of glauconite, phosphorite, epidote; patches of ferricrete; small amount shell debris.
120-130	Clay - gray, very sandy, scattered small pebbles; sand fine-grained, moderately sorted, angular to subangular; moderately micaceous (muscovite); very slightly glauconitic, pyritic, and phosphoritic; small amount of shell (pelecypods).
130-140	Sand - gray, very argillaceous; fine-to very-fine-grained, moderately sorted, angular to subangular; micaceous (muscovite); very slightly glauconitic, phosphoritic, pyritic; trace of shell.
140-150	As above - increasing glauconite.
150-160	As above
160-170	As above
170-180	As above
180-190	No Sample
190-200	Sand - dark-gray, very argillaceous; very-fine-to fine-grained, well-sorted, angular; slightly micaceous (muscovite) and glauconitic; moderate amount shell fragments.
200-210	Sand - gray, argillaceous, scattered rounded pebbles (4-15 mm); fine-to very-coarse-grained, poorly sorted, variably rounded; slightly to moderately glauconitic; moderate amount chalky shell fragments.
210-220	As above

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220-230	Sand - gray, argillaceous, scattered rounded pebbles (4-15 mm); fine-to very-coarse-grained, poorly sorted, variably rounded; slightly to moderately glauconitic; moderate amount chalky shell fragments.
230-240	As above
Patuxent Formation (240-300')	
240-250	As above - but moderately limanitic.
250-260	Sand - gray, moderately argillaceous, a few small pebbles; medium-to very-coarse-grained, moderately sorted, subangular to subrounded; small amounts glauconite and feldspar; traces of garnet, epidote.
260-270	Sand and Gravel - gray, moderately argillaceous; medium-to very-coarse-grained, moderately sorted, subangular to subrounded; gravel fraction (35-40%) consists of rounded pebbles (4-10 mm); moderately arkosic and glauconitic; scattered grains pink garnet, brown epidote, fine-grained pyrite; a few shell fragments.
270-280	Sand - gray, argillaceous, scattered pebbles (10-15 mm); medium-to very-coarse-grained, moderately sorted, subangular to subrounded; slightly arkosic and glauconitic; abundant lumps of variegated clay; moderate amount shell debris, and a few plant fragments.
280-290	As above
290-300	As above
300-326	No Sample
Petersburg Granite (326-525')	
326-336	Granitic Residuum - clear to milky quartz, white to orange microcline, and biotite; biotite mostly fresh but with incipient chloritization of some flakes; some rock fragments, trace of glauconite; comprehensive iron-staining.
336-346	Biotite-Hornblende gneiss - banded black, pink, white, medium-grained, subequal amounts biotite and hornblende; quartz, pink and white feldspar (mostly microcline); accessory brown sphene (especially abundant in amphibole lenses), some green epidote, and trace of apatite and pyrite.
346-356	As above

356-366	Biotite gneiss - banded black, pink, white; medium-grained, abundant biotite lenses and subordinate hornblende lenses; quartz, pink and white feldspar (mostly microcline); muscovite, pyrite, magnetite, and brown sphene are principal accessories; traces of apatite, zircon, and garnet (small, reddish-brown crystals).
366-376	As above
376-386	As above
386-400	As above
400-410	Biotite-Hornblende gneiss - medium-grained mafic lenses, medium-to very-coarse-grained leucocratic lenses; biotite and subordinate green hornblende; quartz, pink to clear feldspar (mostly microcline); moderate amount magnetite; principal accessories brown sphene and green epidote; traces of pyrite, zircon, garnet.
410-420	As above
420-430	As above
430-440	As above
440-450	As above
450-460	As above
460-470	As above
470-480	As above
480-490	As above
490-500	As above
500-510	As above
510-525	As above

GEOLOGIC SUMMARY

	ROCK UNIT	TIME ROCK UNIT
0-50	Columbia group	Pliocene - Pleistocene
50-60	Calvert Formation	Miocene
60-240	Pamunkey group	Eocene
240-300	Patuxent Formation	Lower Cretaceous
300-326	No Sample	
326-525	Petersburg granite	Paleozoic

Virginia Division of Mineral Resources
Robert H. Teifke - Geologist
October 15, 1965

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DRILLER: Sydnor Pump & Well Co., Inc.
COUNTY: Hanover (Atlee)

VDMR WELL # 1388
WWCR WELL # 82
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Columbia Group (0-50')

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10-20	Sand - buff, clean; medium-to coarse-grained, well-sorted, subangular to subrounded; slightly feldspathic (dull white feldspar); traces of glauconite, muscovite, iron oxides, epidote, rutile, kyanite.
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	Note: 0-40' interval contains relatively abundant accessory mineral suite, well-rounded, and dominated by rutile; kyanite and epidote also present.
40-50	Sand - brown; medium-to very-coarse-grained, moderately sorted, subangular to rounded; abundant white feldspar; small amount ferricrete; small amount silty gray clay.

Calvert Formation (50-~~60~~ 140)

50-60	Sand - medium-gray, argillaceous (gray clay with abundant finely divided muscovite); bimodal sand; fine-grained, well-sorted, angular to subangular (80%); coarse-grained, moderately sorted, subrounded (20%); abundant white and gray feldspar, traces of glauconite, zircon, epidote, phosphorite.

~~Pamunkey Group~~ (60-240')

60-70	Sand - gray, moderately argillaceous, about 10% granules; bimodal sand: fine-grained, well sorted, angular to subangular (50%); very-coarse-grained, well-sorted, subangular to rounded (50%); some feldspar; traces of epidote, zircon, hornblende, phosphorite; small amount shell debris (pelecypods and gastropods).
70-80	As above

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80-90	Sand and Gravel - gray, very argillaceous; fine-to very-fine-grained, well-sorted, angular to subangular; gravel fraction (25%) consists of well-sorted, subrounded to rounded granules (2-4 mm); small amounts feldspar, phosphorite; moderate amount shell debris (pelecypods and gastropods, including Turritella).
90-100	As above - but gravel is slightly coarser (2-6 mm).
100-110	Sand - gray, very argillaceous; fine-grained, moderately sorted, poorly rounded; scattered granules and shell fragments; feldspar present; traces epidote, hornblende, and glauconite.
110-120	Sand and Gravel - gray, argillaceous; fine-to very-coarse-grained; poorly sorted, variably rounded; gravel fraction (10-15%) consists of small, rounded pebbles (2-8 mm); small amount of feldspar; scattered grains of glauconite, phosphorite, epidote; patches of ferricrete; small amount shell debris.
120-130	Clay - gray, very sandy, scattered small pebbles; sand fine-grained, moderately sorted, angular to subangular; moderately micaceous (muscovite); very slightly glauconitic, pyritic, and phosphoritic; small amount of shell (pelecypods).
130-140	Sand - gray, very argillaceous; fine-to very-fine-grained, moderately sorted, angular to subangular; micaceous (muscovite); very slightly glauconitic, phosphoritic, pyritic; trace of shell. SAND / diatom frag
Tc ? (50-140) Manjemoy (140-180) 140-150	As above - increasing glauconite. some calcitic clay aggregates ($FeCO_3$?), brn; glauc w diff-g
150-160	As above
160-170	As above
170-180	As above basal Manjemoy ? (Marlboro clay)
180-190	No Sample
Mattaponi? 190-200 (180-200)	Sand - dark-gray, very argillaceous; very-fine-to fine-grained, well-sorted, angular; slightly micaceous (muscovite) and glauconitic; moderate amount shell fragments.
Patuxent? 200-210 (200-300)	Sand - gray, argillaceous, scattered rounded pebbles (4-15 mm); fine-to very-coarse-grained, poorly sorted, variably rounded; slightly to moderately glauconitic; moderate amount chalky shell fragments.
210-220	As above

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220-230	Sand - gray, argillaceous, scattered rounded pebbles (4-15 mm); fine-to very-coarse-grained, poorly sorted, variably rounded; slightly to moderately glauconitic; moderate amount chalky shell fragments.
230-240	As above

~~Patuxent Formation~~ (240-300')

240-250	As above - but moderately limonitic.
250-260	Sand - gray, moderately argillaceous, a few small pebbles; medium-to very-coarse-grained, moderately sorted, subangular to subrounded; small amounts glauconite and feldspar; traces of garnet, epidote.
260-270	Sand and Gravel - gray, moderately argillaceous; medium-to very-coarse-grained, moderately sorted, subangular to subrounded; gravel fraction (35-40%) consists of rounded pebbles (4-10 mm); moderately arkosic and glauconitic; scattered grains pink garnet, brown epidote, fine-grained pyrite; a few shell fragments.
270-280	Sand - gray, argillaceous, scattered pebbles (10-15 mm); medium-to very-coarse-grained, moderately sorted, subangular to subrounded; slightly arkosic and glauconitic; abundant lumps of variegated clay; moderate amount shell debris, and a few plant fragments.
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