# INTERVAL SHEET

Page 1 of 1

VDMR Well No: 2018

Date rec'd: 10-13-67

Sample Interval: from 0 to: 185

PROP: N & W RR. Well # 213

Number of samples: 18

COMP:

Total Depth: 185

COUNTY: Sussex

Oil or Gas: Water: Exploratory: X

| From-To | From-To | From-To | From-To |
|---|---|---|---|
| 0 - 10 | - | - | - |
| 10 - 20 | - | - | - |
| 20 - 30 | - | - | - |
| 30 - 40 | - | - | - |
| 40 - 50 | - | - | - |
| 50 - 60 | - | - | - |
| 60 - 70 | - | - | - |
| 70 - 80 | - | - | - |
| 80 - 90 | - | - | - |
| 90 - 100 | - | - | - |
| 100 - 110 | - | - | - |
| 110 - 120 | - | - | - |
| 120 - 130 | - | - | - |
| 130 - 140 | - | - | - |
| - | - | - | - |
| 150 - 160 | - | - | - |
| 160 - 170 | - | - | - |
| 170 - 180 | - | - | - |
| 180 - 185 | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |

All intervals have both washed and unwashed samples

Drilled 10/66
Continental
L/E/G

Geologic log ✓
Strip log ✓
ELEV. : 105'

SUS-T-2
NW 213
VDMR 2018

# CONFIDENTIAL

## INTERVAL SHEET

Page 1 of 1

Date rec'd: 7/7/67

PROP:

COMP:

COUNTY: Sussex

3.0 Miles NN of Wakefield at X NWRR and Rte. 604. (MANRY SHEET)

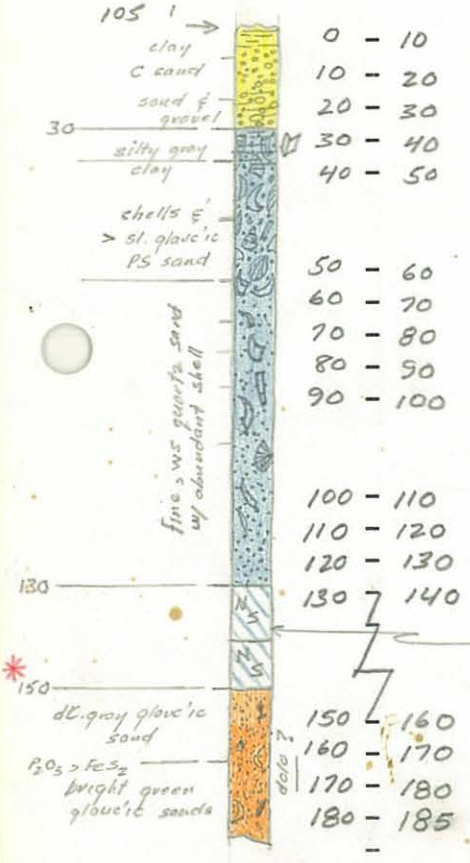
VDMR Well No:

Sample Interval: from 0 to 185

Number of samples: 18

Total Depth: 185'

Oil or Gas: Water: Exploratory: ✓




sample considered as misplaced.

| UNW From-To | From-To | From-To | From-To |
|---|---|---|---|
| 0 - 10 | - | - | - |
| 10 - 20 | - | - | - |
| 20 - 30 | - | - | - |
| 30 - 40 | - | - | - |
| 40 - 50 | - | - | - |
| 50 - 60 | - | - | - |
| 60 - 70 | - | - | - |
| 70 - 80 | - | - | - |
| 80 - 90 | - | - | - |
| 90 - 100 | - | - | - |
| 100 - 110 | - | - | - |
| 110 - 120 | - | - | - |
| 120 - 130 | - | - | - |
| 130 - 140 | - | - | - |
| | - | - | - |
| 150 - 160 | - | - | - |
| 160 - 170 | - | - | - |
| 170 - 180 | - | - | - |
| 180 - 185 | - | - | - |
| | - | - | - |

* base Ty. acc. to USGS, and acc. to γ-logs is at 150'.

CONFIDENTIAL

County: SUSSEX
VDMR Well # 2018

Well: N & W Railroad Well # 213
Property: N & W Railroad
Driller:
Location: Manry 7.5' Quadrangle; southeast corner of junction of U. S. Highway 460 and State Route 604.
Elevation: 108'
Total depth: 185'
Started drilling: Finished drilling:
Sample description by: J.K. Polzin, Virginia Division of Mineral Resources
Reference:

GEOLOGIC SUMMARY

OWNER: N. & W. RR. Well #213
COUNTY: Sussex

W # 2018
TOTAL DEPTH - 185'
QUAD. - Manry
ELEV. - 108'

| DEPTH (FEET) | WELL LOG |
|---|---|
| 0-10 | Clay - very pale orange (10YR 8/2); moderate sand; fine to medium, subangular, moderate sorting; very rare glauconite. |
| 10-20 | Sand - grayish yellow (5Y 7/2); medium to very coarse, subangular, moderate sorting; rose quartz; feldspar. |
| 20-40 | Clay - grayish yellow (5Y 7/2); sand; medium to very coarse, subangular and some subrounded, moderate sorting. |
| 40-100 | Sand, Shelly - light and dark gray; 50% shell fragments; clay; fine to coarse, subangular, poorly sorted; shell fragments - Barbatia, Diodora, Mulinia, Venicardia; calcium carbonate powder; bryozoa. |
| 100-140 | Sand - light olive gray (5Y 5/2); clay; fine to medium, subangular, moderately well sorted; 3-5% shell fragments; rare glauconite; gypsum crystals at 130-140'. |
| 130-140 | Sand - light olive gray (5Y 7/1); fine to very coarse, subangular, moderate sorting; 1% fine glauconite; 1% shell fragments; 10% fine crystals of gypsum; 10% bryozoa fragments. |
| 140-150 | No sample. |
| 150-170 | Sand - olive gray (5Y 4/1); clay; fine to coarse, subangular, moderately well sorted; 40% glauconite; 10% fine shell fragments; forams — Robulus, Marginulina, Pyrulina, Nodosaria, Cibicides, Discorbis, Guttulina, Globulina, Dentalina; ostracods; fragments of massive bryozoan; echinoderm spines; 5% mica. |
| 170-185 | Sand, Glauconitic - dusky yellow green (5GY 5/2); moderate to abundant clay; 90% glauconite; medium to very coarse with some weathering; fine to coarse, subangular and subrounded, poorly sorted quartz grains; rare coquina fragments and shell fragments. |

Logged By:

J. K. Polzin
March 1980

VDMR Well No. 2018
County: Sussex

Well: N. & W. RR. Well # 213
Property: Norfolk and Western Railway
Driller: Norfolk and Western Railway
Location: 3.0 miles NW of Wakefield, at intersection of Rte. 604 and NWRR; 77° 01' 40" W, 36° 59' 00" N
Elevation: 105 feet
Total Depth: 185 feet
Started drilling: October, 1966 Completed drilling: October, 1966
Sample description by: R. H. Teifke, Virginia Division of Mineral Resources, September, 1968

## GEOLOGIC LOG *

Depth in feet

COLUMBIA GROUP ( 0-30')

0-10 Clay — light-gray and orange-brown (interlaminated), slightly sandy; sand is fine- to very fine-grained, very well-sorted, angular; traces of muscovite and weathered glauconite

10-20 Sand — tan, very slightly clayey; medium- to very coarse-grained, fairly well-sorted, angular to subangular; clear quartz, with 20% white, partially decomposed feldspar; minor amounts of blue quartz and chert

20-30 Sand and gravel — abundant matrix of gray clay with purple cast, locally light-yellow; 30% fine (2-10 mm), subrounded quartzo-feldspathic gravel; 70% medium- to very coarse-grained, rather poorly sorted, angular to subrounded sand; moderately feldspathic, blue quartz common; trace of garnet

VDMR Well No. 2018

YORKTOWN FORMATION ( 30-130')

| | |
|---|---|
| 30-40 | Clay — gray, mottled orange-brown, silty; coarse silt and very fine-grained sand is well-sorted, quartzose, slightly micaceous; minor amounts of selenite and glauconite; a very few echinoid spines |
| 40-50 | Shells and sand — binder of brownish-gray clay; 80% pelecypod (-gastropod-scaphopod-coral-bryozoan) shells and shell fragments; 20% very fine--to coarse-grained, poorly sorted, angular to sub-rounded sand; sand is moderately glauconitic in fine grades, slightly feldspathic in coarsest grade; a few foraminifers |
| 50-60 | " 75% pelecypod shells and shell fragments, 25% medium- to coarse-grained, slightly to moderately glauconitic sand; a few Textularia |
| 60-70 | " 50% pelecypod (-bryozoan-coral ) shell debris; 50% fine--to very coarse-grained, poorly sorted, very slightly glauconitic sand; a few Cibicides Textularia, and ostracods |
| 70-80 | Sand and shell - sparse binder of grayish-brown clay; 50% coarse pelecypod (-gastropod-scaphopod ) shell debris; 50% fine--to very fine-grained, well-sorted, angular sand; clear quartz, with a trace of glauconite; a few Textularia, Nonion, and miliolids |
| 80-90 | " |
| 90-100 | Sand and shell - binder of greenish-brown clay; 60% fine--to very fine-grained, very well-sorted, angular, clear quartz sand with 5% glauconite; 40% pelecypod (-gastropod-bryozoan) shell debris; a very few Nonion, Textularia, and ostracods |

VDMR Well No. 2018

| | | |
|---|---|---|
| 100-110 | " | 80% fine--to medium-grained, very well-sorted sand; 20% pelecypod - gastropod shell material |
| 110-120 | " | 90% fine--to medium-grained, very well-sorted sand; 10% pelecypod (-gastropod-bryozoan) shell material, a few bone fragments and crystals of selenite |
| 120-130 | Sand - | moderately abundant matrix of greenish-brown clay, 15-20% pelecypod and scaphopod shell fragments and a few bone fragments and echinoid spines; fine-grained, very well-sorted, angular; quartz, with 2-3% each of glauconite and small fragments of carbono-phosphorite; a very few Textularia, Nonion, and ostracods |
| 130-140 | Clay - | gray, mottled brown, very silty, moderately sandy; sand is fine--to very fine-grained, very well-sorted, angular; trace of glauconite; abundant fine-grained selenite |
| 140-150 | No sample | |

MATTAPONI FORMATION ( 150-185')

| | | |
|---|---|---|
| 150-160 | Sand - | abundant matrix of dark-gray clay, a few shell fragments; very fine--to medium-grained, moderately sorted; 65% angular quartz, 35% dark-green glauconite; accessory muscovite and bone and nodular phosphorite; traces of gypsum and pyrite; foraminifers common (Robulus, Nodosaria, Dentalina) but not abundant; a very few ostracods and echinoid spines |
| 160-170 | Sand - | very abundant matrix of dark greenish-gray clay; fine--to medium-grained, well-sorted; 65% blackish-and light-green glauconite, 35% angular quartz, pyrite common; a few nodules and bone fragments of phosphorite; trace of shell fragments |

VDMR Well No. 2018

| | | |
|---|---|---|
| 170-180 | Sand — | moderately abundant matrix of bright-green clay, a few pelecypod shells and shell fragments; fine- to medium-grained, fairly well-sorted; 85% medium- to light-green glauconite, and 15% angular to subangular quartz; numerous pyrite nodules, a few phosphatic nodules and bone fragments, and a trace of selenite |
| 180-185 | " | 60% glauconite, 40% quartz |

## GEOLOGIC SUMMARY

| | Rock Unit | Age |
|---|---|---|
| 0-30 | Columbia Group | Pleistocene |
| 30-130 | Yorktown Formation | Late Miocene |
| 130-150 | No Sample | |
| 150-185 | Mattaponi Formation | Paleocene |

Note: 130-140' sample is same sample as that representing 30-40' interval, lithology of 130-150' interval is considered unknown.

* The use of the lithologic term, "clay" includes all size ranges of particles less than 1/32 mm.

VDMR Well No. 2018
County: Sussex

Well: N. & W. RR. Well # 213
Property: Norfolk and Western Railway
Driller: Norfolk and Western Railway
Location: 3.0 miles NW of Wakefield, at intersection of Rte. 604 and NWRR; 77° 01' 40" W, 36° 59' 00" N
Elevation: 105 feet
Total Depth: 185 feet
Started drilling: October, 1966 Completed drilling: October, 1966
Sample description by: R. H. Teifke, Virginia Division of Mineral Resources, September, 1968

## GEOLOGIC LOG *

| Depth in feet | |
|---|---|
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VDMR Well No. 2018

YORKTOWN FORMATION ( 30-130')

30-40 Clay — gray, mottled orange-brown, silty; coarse silt and very fine-grained sand is well-sorted, quartzose, slightly micaceous; minor amounts of selenite and glauconite; a very few echinoid spines

40-50 Shells and sand — binder of brownish-gray clay; 80% pelecypod (-gastropod-scaphopod-coral-bryozoan) shells and shell fragments; 20% very fine- to coarse-grained, poorly sorted, angular to sub-rounded sand; sand is moderately glauconitic in fine grades, slightly feldspathic in coarsest grade; a few foraminifers

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80-90 "

90-100 Sand and shell - binder of greenish-brown clay; 60% fine- to very fine-grained, very well-sorted, angular, clear quartz sand with 5% glauconite; 40% pelecypod (-gastropod-bryozoan) shell debris; a very few Nonion, Textularia, and ostracods

VDMR Well No. 2018

| | | |
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| 140-150 | No sample | |

MATTAPONI FORMATION ( 150-185')

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VDMR Well No. 2018

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