

INTERVAL SHEET

Page 1 of 1

VDMR Well No: 2024

Date rec'd:

Sample Interval: from 0 to: 320

PROP: C-159

Number of samples: 30

COMP:

Total Depth: 320

COUNTY: Southampton

Oil or Gas: Water: Exploratory: X

From-To	From-To	From-To	From-To
0 - 10	300 - 310	-	-
10 - 20	310 - 320	-	-
20 - 30	-	-	-
30 - 40	-	-	-
40 - 50	-	-	-
50 - 60	-	-	-
60 - 70	-	-	-
-	-	-	-
80 - 90	-	-	-
90 - 100	-	-	-
100 - 110	-	-	-
110 - 120	-	-	-
120 - 130	-	-	-
130 - 140	-	-	-
140 - 150	-	-	-
150 - 160	-	-	-
160 - 170	-	-	-
170 - 180	-	-	-
180 - 190	-	-	-
-	-	-	-
200 - 210	-	-	-
210 - 220	-	-	-
220 - 230	-	-	-
230 - 240	-	-	-
240 - 250	-	-	-
250 - 260	-	-	-
260 - 270	-	-	-
270 - 280	-	-	-
280 - 290	-	-	-
290 - 300	-	-	-

All intervals have washed and unwashed samples

Drilled 5/66

Continental

L/E/G

ELEV. ~ 450'

Geol. Log ✓  
Strip Log

50-T-5

C-159

# CONFIDENTIAL

## INTERVAL SHEET

Page 1 of 1

VDMR Well No: **WELL NO. 2024**

Date rec'd: 7/18/67

Sample Interval: from 0 to 320

PROP: 

1.0 Mile NE. of  
Boykins on SAL  
R.R.  
(BOYKINS (15')  
SHEET)

Number of samples: 30

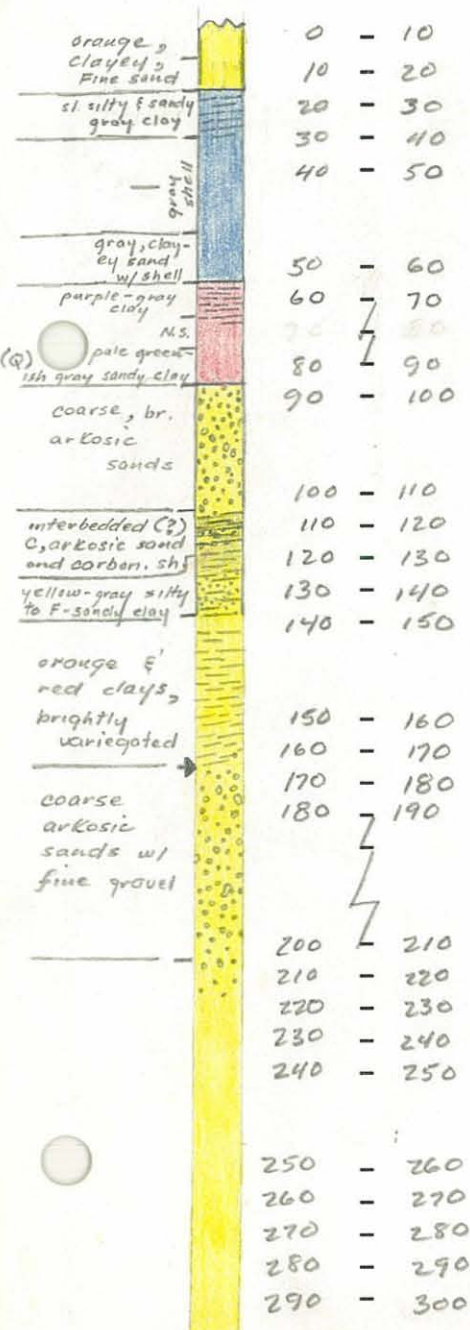
COMP:

Total Depth: 320'

COUNTY: Southampton

Oil or Gas: Water: Exploratory: ✓

LINW	From-To	From-To	From-To	From-To
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orange clayey fine sand	0 - 10	300 - 310	-	-
silty sandy gray clay	10 - 20	310 - 320	-	-
gray clayey sand w/ shell	20 - 30	-	-	-
purple-gray clay	30 - 40	-	-	-
pale green N.S.	40 - 50	-	-	-
coarse br. arkosic sands	50 - 60	-	-	-
interbedded C, arkosic sand and carbon. sh	60 - 70	-	-	-
yellow-gray silty to F-sandy clay	70 - 80	-	-	-
orange & red clays brightly variegated	80 - 90	-	-	-
coarse arkosic sands w/ fine gravel	90 - 100	-	-	-
	100 - 110	-	-	-
	110 - 120	-	-	-
	120 - 130	-	-	-
	130 - 140	-	-	-
	140 - 150	-	-	-
	150 - 160	-	-	-
	160 - 170	-	-	-
	170 - 180	-	-	-
	180 - 190	-	-	-
	200 - 210	-	-	-
	210 - 220	-	-	-
	220 - 230	-	-	-
	230 - 240	-	-	-
	240 - 250	-	-	-
	250 - 260	-	-	-
	260 - 270	-	-	-
	270 - 280	-	-	-
	280 - 290	-	-	-
	290 - 300	-	-	-

CONFIDENTIAL

Well: C-159

Property: Seaboard Air Line Railway

Driller: Norfolk and Western Railway

Location: 1.0 mile NE of Boykins, on railroad right-of-way;

77°11'30"W, 36°35'30"N

Elevation: 50 feet

Total Depth: 320 feet

Started drilling: May 1966

Completed drilling: May 1966

Sample description by: Robert H. Teifke, Virginia Division of Mineral Resources  
August 1, 1968

GEOLOGIC LOG\*

Depth in  
feet

COLUMBIA GROUP (0-20')

0-10 Clay- orange and light-gray, limonitic, silty and sandy;  
sand is dominantly fine- to very fine-grained, well-  
sorted, angular; slightly feldspathic; dominant occur-  
rence of limonite is as tubular masses

10-20 " very little limonite

YOKTOWN FORMATION (20-60')

20-30 Clay - medium-gray, locally yellow and brown, slightly  
silty and sandy; non-clay fraction consists of  
coarse-grained silt to fine-grained sand, and is  
well-sorted, angular; fine-grained selenite and  
dark-green glauconite are common accessory  
minerals; minor feldspar

30-40 Shell - gray, sparse matrix of clay and slightly glauconitic,  
medium- to very fine-grained quartz sand; ab-  
raded pelecypod (-echinoid-bryozoan-coral) shell  
fragments ranging in size from 0.25 to 15.0 mm

40-50 "

50-60 Sand and Shell - abundant binder of medium-gray clay;  
15 percent coarse pelecypod shell fragments; 70  
percent fine- to very fine-grained, well-sorted,  
angular, slightly glauconitic quartz sand

TRANSITIONAL BEDS (60-170')

60-70 Clay - gray, with purple cast, very slightly sandy, trace  
of glauconite

70-80 No sample

- 80-90 Clay - pale greenish-gray, sandy, a very few shell fragments; sand is very fine- to medium-grained, fairly well-sorted, angular; clear quartz, with minor feldspar and muscovite; trace of fine glauconite
  
- 90-100 Sand - light-brown, slightly clayey; medium- to very coarse-grained, moderately sorted, subangular to subrounded; abundant fresh and weathered feldspar; minor muscovite; trace of garnet
  
- 100-110 " coarse- to very coarse-grained, fairly well-sorted
  
- 110-120 Sand and Clay - 50 percent coarse- to very coarse-grained, fairly well-sorted, subangular to rounded, very feldspathic sand, with accessory garnet; 50 percent dark-gray to black, moderately indurated and fissile clay; clay is virtually sand-free, and contains considerable selenite and some pyrite
  
- 120-130 Clay - dark-bluish-gray, moderately indurated and fissile clay with discrete bodies of carbonaceous material, and tan, blackish-brown weathering, silty and sandy clay; sand fraction is fine, angular, moderately micaceous
  
- 130-140 Clay - pale yellowish-gray, silty and sandy; non-clay fraction consists of coarse silt to fine-grained sand; angular, well-sorted, moderately micaceous, slightly feldspathic
  
- 140-150 Clay - brightly variegated, with orange-red aspect, slightly sandy; sand is fine, fairly well-sorted, angular; slightly micaceous and feldspathic
  
- 150-160 " "
  
- 160-170 " brightly variegated, with purplish red aspect
  
- PATUXENT FORMATION (170-320')
  
- 170-180 Sand - abundant matrix of reddish-brown clay, 20 percent quartzo-feldspathic granule gravel; medium- to very coarse-grained, fairly well-sorted, subangular to subrounded; feldspathic
  
- 180-190 "
  
- 190-200 No sample

200-210	Sand - sparse matrix of reddish-brown clay, 15 percent quartzo-feldspathic granule gravel; medium to very coarse-grained, moderately sorted, subangular to subrounded; feldspathic
210-220	" abundant matrix of brown clay
220-230	Clay - red, mottled grayish-green, sandy; sand is fine- to coarse-grained, rather poorly sorted, angular to subangular; feldspathic; trace of muscovite
230-240	Clay - yellowish-brown, silty and sandy; non-clay fraction consists of coarse silt to coarse-grained sand, poorly sorted, angular to rounded; feldspathic; slightly micaceous; hematite and goethite common
240-250	Sand - abundant matrix of variegated clay with reddish-brown aspect; fine- to very fine-grained, well-sorted, angular, moderately micaceous and feldspathic; minor magnetite
250-260	Sand - gray, silty and clayey; fine- to very fine-grained, well-sorted, angular; moderately micaceous and feldspathic
260-270	Clay - yellowish-gray, moderately sandy; sand is fine- to coarse-grained, poorly sorted, angular to subrounded; clear quartz; slightly feldspathic; appreciable muscovite and biotite
270-280	Sand - abundant matrix of reddish-brown clay, trace of fine gravel; fine- to coarse-grained, rather poorly sorted, angular to rounded; feldspathic
280-290	" with 15 percent fine-grained quartzo-feldspathic gravel
290-300	" with 30 percent fine-grained quartzo-feldspathic gravel
300-310	" with 30 percent fine-grained quartzo-feldspathic gravel
310-320	No sample

GEOLOGIC SUMMARY

	<u>Rock Unit</u>	<u>Age</u>
0-20	Columbia Group	post-Miocene
20-60	Yorktown Formation	Miocene
60-170	Transitional beds	Late Cretaceous
170-320	Patuxent Formation	Early Cretaceous

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

Well: C-159

Property: Seaboard Air Line Railway

Driller: Norfolk and Western Railway

Location: 1.0 mile NE of Boykins, on railroad right-of-way;

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Elevation: 50 feet

Total Depth: 320 feet

Started drilling: May 1966

Completed drilling: May 1966

Sample description by: Robert H. Teifke, Virginia Division of Mineral Resources

August 1, 1968 ; *Stratigraphy revised, R.H. Teifke, March 3, 1972*

GEOLOGIC LOG\*

Depth in  
feet

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10-20 " very little limonite

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20-30 Clay - medium-gray, locally yellow and brown, slightly  
silty and sandy; non-clay fraction consists of  
coarse-grained silt to fine-grained sand, and is  
well-sorted, angular; fine-grained selenite and  
dark-green glauconite are common accessory  
minerals; minor feldspar

30-40 Shell - gray, sparse matrix of clay and slightly glauconitic,  
medium- to very fine-grained quartz sand; ab-  
raded pelecypod (-echinoid-bryozoan-coral) shell  
fragments ranging in size from 0.25 to 15.0 mm

40-50 "

50-60 Sand and Shell - abundant binder of medium-gray clay;  
15 percent coarse pelecypod shell fragments; 70  
percent fine- to very fine-grained, well-sorted,  
angular, slightly glauconitic quartz sand

TRANSITIONAL BEDS (60-170')

60-70 Clay - gray, with purple cast, very slightly sandy, trace  
of glauconite

70-80 No sample

- 80-90 Clay - pale greenish-gray, sandy, a very few shell fragments; sand is very fine- to medium-grained, fairly well-sorted, angular; clear quartz, with minor feldspar and muscovite; trace of fine glauconite
- 90-100 Sand - light-brown, slightly clayey; medium- to very coarse-grained, moderately sorted, subangular to subrounded; abundant fresh and weathered feldspar; minor muscovite; trace of garnet
- 100-110 " coarse- to very coarse-grained, fairly well-sorted
- 110-120 Sand and Clay - 50 percent coarse- to very coarse-grained, fairly well-sorted, subangular to rounded, very feldspathic sand, with accessory garnet; 50 percent dark-gray to black, moderately indurated and fissile clay; clay is virtually sand-free, and contains considerable selenite and some pyrite
- 120-130 Clay - dark-bluish-gray, moderately indurated and fissile clay with discrete bodies of carbonaceous material, and tan, blackish-brown weathering, silty and sandy clay; sand fraction is fine, angular, moderately micaceous
- 130-140 Clay - pale yellowish-gray, silty and sandy; non-clay fraction consists of coarse silt to fine-grained sand; angular, well-sorted, moderately micaceous, slightly feldspathic
- 140-150 Clay - brightly variegated, with orange-red aspect, slightly sandy; sand is fine, fairly well-sorted, angular; slightly micaceous and feldspathic
- 150-160 " "
- 160-170 " brightly variegated, with purplish red aspect

PATUXENT FORMATION (170-320')

- 170-180 Sand - abundant matrix of reddish-brown clay, 20 percent quartzo-feldspathic granule gravel; medium- to very coarse-grained, fairly well-sorted, subangular to subrounded; feldspathic
- 180-190 "
- 190-200 No sample

- 200-210 Sand - sparse matrix of reddish-brown clay, 15 percent quartzo-feldspathic granule gravel; medium to very coarse-grained, moderately sorted, subangular to subrounded; feldspathic
- 210-220 " abundant matrix of brown clay
- 220-230 Clay - red, mottled grayish-green, sandy; sand is fine- to coarse-grained, rather poorly sorted, angular to subangular; feldspathic; trace of muscovite
- 230-240 Clay - yellowish-brown, silty and sandy; non-clay fraction consists of coarse silt to coarse-grained sand, poorly sorted, angular to rounded; feldspathic; slightly micaceous; hematite and goethite common
- 240-250 Sand - abundant matrix of variegated clay with reddish-brown aspect; fine- to very fine-grained, well-sorted, angular, moderately micaceous and feldspathic; minor magnetite
- 250-260 Sand - gray, silty and clayey; fine- to very fine-grained, well-sorted, angular; moderately micaceous and feldspathic
- 260-270 Clay - yellowish-gray, moderately sandy; sand is fine- to coarse-grained, poorly sorted, angular to subrounded; clear quartz; slightly feldspathic; appreciable muscovite and biotite
- 270-280 Sand - abundant matrix of reddish-brown clay, trace of fine gravel; fine- to coarse-grained, rather poorly sorted, angular to rounded; feldspathic
- 280-290 " with 15 percent fine-grained quartzo-feldspathic gravel
- 290-300 " with 30 percent fine-grained quartzo-feldspathic gravel
- 300-310 " with 30 percent fine-grained quartzo-feldspathic gravel
- 310-320 No sample

GEOLOGIC SUMMARY

	<u>Rock Unit</u>	<u>Age</u>
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60-170	Transitional beds	Late Cretaceous
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County: Southampton

Well: C-159  
Property: Seaboard Air Line Railway  
Driller: Norfolk and Western Railway  
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Elevation: 50 feet  
Total Depth: 320 feet  
Started drilling: May 1966      Completed drilling: May 1966  
Sample description by: Robert H. Teifke, Virginia Division of  
Mineral Resources, August, 1968

GEOLOGIC LOG \*

Depth in  
feet

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sorted, angular; slightly feldspathic; dominant occur-  
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20-30      Clay — medium-gray, locally yellow and brown, slightly  
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dark-green glauconite are common accessory  
minerals; minor feldspar

VDMR Well No. 2024

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- 40-50 "
- 50-60 Sand and shell — abundant binder of medium-gray clay; 15% coarse pelecypod shell fragments; 70% fine- to very fine-grained, well-sorted, angular, slightly glauconitic quartz sand

TUSCALOOSA FORMATION ( 60-90')

- 60-70 Clay — gray, with purple cast, very slightly sandy, trace of glauconite
- 70-80 No sample
- 80-90 Clay — pale greenish-gray, sandy, a very few shell fragments; sand is very fine- to medium-grained, fairly well-sorted, angular; clear quartz, with minor feldspar and muscovite; trace of fine glauconite

PATUXENT FORMATION ( 90-310')

- 90-100 Sand — light-brown, slightly clayey; medium- to very coarse-grained, moderately sorted, subangular to subrounded; abundant fresh and weathered feldspar; minor muscovite; trace of garnet
- 100-110 " coarse- to very coarse-grained, fairly well-sorted
- 110-120 Sand and clay — 50% coarse- to very coarse-grained, fairly well-sorted, subangular to rounded, very feldspathic sand, with accessory garnet; 50% dark-gray to black, moderately indurated and fissile clay; clay is virtually sand-free, and contains considerable selenite and some pyrite

VDMR Well No. 2024

120-130	Clay	—	dark bluish-gray, moderately indurated and fissile clay with discrete bodies of carbonaceous material, and tan, blackish-brown-weathering, silty and sandy clay; sand fraction is fine, angular, moderately micaceous
130-140	Clay	—	pale yellowish-gray, silty and sandy; non-clay fraction consists of coarse silt to fine-grained sand; angular, well-sorted, moderately micaceous, slightly feldspathic
140-150	Clay	—	brightly variegated, with orange-red aspect, slightly sandy; sand is fine, fairly well-sorted, angular; slightly micaceous and feldspathic
150-160	"		"
160-170	"		brightly variegated, with purplish-red aspect
170-180	Sand	—	abundant matrix of reddish-brown clay, 20% quartzo-feldspathic granule gravel; medium- to very coarse-grained, fairly well-sorted, subangular to subrounded; feldspathic
180-190	"		"
190-200	No sample		
200-210	Sand	—	sparse matrix of reddish-brown clay, 15% quartzo-feldspathic granule gravel; medium- to very coarse-grained, moderately sorted, subangular to subrounded; feldspathic
210-220	"		abundant matrix of brown clay
220-230	Clay	—	red, mottled grayish-green, sandy; sand is fine- to coarse-grained, rather poorly sorted, angular to subangular; feldspathic; trace of muscovite

VDMR Well No. 2024

230-240	Clay	— yellowish-brown, silty and sandy; non-clay fraction consists of coarse silt to coarse-grained sand, poorly sorted, angular to rounded; feldspathic; slightly micaceous; hematite and goethite common
240-250	Sand	— abundant matrix of variegated clay with reddish-brown aspect; fine- to very fine-grained, well-sorted, angular; moderately micaceous and feldspathic; minor magnetite
250-260	Sand	— gray, silty and clayey; fine-to very fine-grained, well-sorted, angular; moderately micaceous and feldspathic
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280-290	"	with 15% fine-grained quartzo-feldspathic gravel
290-300	"	with 30% fine-grained quartzo-feldspathic gravel
300-310	"	with 30% fine-grained quartzo-feldspathic gravel
310-320	No sample	

VDMR Well No. 2024

GEOLOGIC SUMMARY

	<u>Rock Unit</u>	<u>Age</u>
0-20	Columbia Group	Pleistocene
20-60	Yorktown Formation	Late Miocene
60-90	Tuscaloosa Formation	Late Cretaceous
90-310	Patuxent Formation	Early Cretaceous
310-320	No sample (but shown on interval sheet)	

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