

OWNER: U.S. Navy Weapons Lab. (Dahlgren #9)
DRILLER: Layne-Atlantic Company
COUNTY: King George (Dahlgren)

VDMR: 1953
WWCR: 69
TOTAL DEPTH 807'

GEOLOGIC LOG

Depth in feet

COLUMBIA GROUP (0-10')

0-10 Sand - yellow, clayey; well sorted, angular; limonitic

NANJEMOY FORMATION (10-178')

10-20 Sand and Gravel - gray, slightly clayey; 40% granules and a few small pebbles; 60% poorly-sorted sand; moderately glauconitic

20-30 Sand and Gravel - brown, slightly clayey; 50% well-sorted granule gravel; 50% medium sand; quartz and glauconite; minor muscovite.

30-60 " "

60-95 Sand - black, clayey; fine to medium; black glauconite and clear-to-greenish angular quartz; minor muscovite

95-98 No sample

98-140 Clay - dull pink, silty and sandy; sand is fine to medium; clear-to-greenish angular quartz, with 30% black glauconite, and minor muscovite; a few shell fragments and foraminifers

140-142 No sample

142-178 Clay and Gravel - 50% pink clay, 50% pebble gravel (5-15 mm.)

AQUIA FORMATION (178-280')

178-200 Sand - black, moderately clayey; fine to medium, moderately sorted; very glauconitic; 10% shell fragments; Nodosaria

200-280 Sand and Shell - gray, moderately clayey; 40% pelecypod and gastropod shells and shell fragments; 60% fine-to-medium sand; black glauconite, and clear-to-greenish angular quartz; minor muscovite; a few foraminifers

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MATTAPONI FORMATION (280-370')

280-370 Sand - brown, very clayey; poorly-sorted quartz, with 25-30% glauconite; a few shell fragments

PATUXENT FORMATION (370-807')

370-375 Sand - gray, slightly clayey (brown clay); coarse, feldspathic, slightly glauconitic; abundant blue quartz

375-407 Sand - abundant matrix of brownish, variegated clay, a few pebbles; poorly sorted, angular; moderately glauconitic, moderately feldspathic (weathered feldspar)

407-465 " "

465-495 Sand - brown, very-slightly clayey; coarse to very-coarse, fairly well-sorted; feldspathic; blue quartz very abundant; trace of glauconite

495-566 Clay - brown, variegated, moderately sandy, a few pebbles; sand is generally fine to medium; quartz, weathered feldspar and glauconite

566-573 " "

573-647 Gravel - very-slightly clayey and sandy; 2-20 mm., rounded

647-685 Clay - brown, mottled, moderately sandy; sand is poorly sorted; quartz, weathered feldspar, and glauconite

685-745 Sand - gray, sparse matrix of reddish-brown clay; coarse, moderately sorted; very feldspathic; abundant blue quartz; traces of glauconite and earthy hematite

745-770 Clay - brown, variegated, sandy; sand is poorly sorted, angular; moderately feldspathic

770-780 Sand - gray, sparse matrix of reddish-brown clay; medium-to very coarse-grained, moderately sorted; very feldspathic; abundant blue quartz; slightly glauconitic

780-807 Clay - reddish-brown, very sandy; sand is poorly sorted; feldspathic; trace of glauconite

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GEOLOGIC SUMMARY

| | <u>Rock Unit</u> | <u>Age</u> |
|---------|---------------------|------------------|
| 0-10 | Columbia Group | Pleistocene |
| 10-178 | Nanjemoy Formation | Middle Eocene |
| 178-280 | Aquia Formation | Early Eocene |
| 280-370 | Mattaponi Formation | Paleocene |
| 370-807 | Patuxent Formation | Early Cretaceous |

Note: The size and irregularity of sampled intervals make the stratigraphic value of these samples questionable.

Virginia Division of Mineral Resources
Robert H. Teifke, Geologist
October 12, 1967

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

VDMR - 1953
WWCR - 69

MAILING ADDRESS:
Box 3667
Charlottesville, VA 22903

DIVISION OF MINERAL RESOURCES

JAMES L. CALVER, COMMISSIONER

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

WATER WELL COMPLETION REPORT

OWNER: U. S. Naval Weapons Lab. Mailing Address: Dahlgren, Virginia

TENANT: Well #9 Mailing Address: _____

DRILLER: Layne-Atlantic Company Mailing Address: P. O. Box 7095, Norfolk, Va. 23509

WELL LOCATION: County King George, Approx. _____ feet miles _____ (direction) of _____
at proving grounds _____ and _____ feet miles _____ east _____ (direction) of Dahlgren

(GIVE DIRECTION AND DISTANCE IN FEET OR MILES FROM TWO REFERENCE POINTS - ROADS, TOWNS, RIVERS, ETC. - ON COUNTY HIGHWAY OR OTHER MAP.)

DATE STARTED: July 17, 1967 DATE COMPLETED: July 29, 1967

TYPE OF DRILL RIG USED: Rotary TOTAL DEPTH 735 feet

WATER LEVEL: Stands 69 feet below surface OR _____
has NATURAL flow of _____ gallons per minute.

YIELD TEST: Method _____

Drawdown 106 feet

Rate 500 gal. per min.

Duration 24 hrs., _____ min.

WATER ZONES: from 660 to 670 feet

from 680 to 730 feet

from _____ to _____ feet

WATER: Color Clear Taste Good

Odor None Temp. ND °F

WELL TO SUPPLY: (check one) Home _____

Farm _____ Town _____ School _____

Industry _____ Other Govmt. installation

WATER ANALYSIS AVAILABLE: Yes _____ No X

DRILL CUTTINGS SAVED: Yes X No _____

(DRILL CUTTINGS SHOULD BE COLLECTED AT 10 FOOT INTERVALS. THESE SAMPLES MAY BE SHIPPED TO THIS OFFICE EXPRESS COLLECT. SAMPLE BAGS ARE FURNISHED FREE OF CHARGE UPON REQUEST.)

REMARKS: Bottom of 10' casing orange peeled and welded. Gravel packed from 735' up to surface.

HOLE SIZE: 24 inches from 0 to 200 feet

16 inches from 200 to 650 feet

28 inches from 650 to 735 feet

16 inches from 735 to 807 feet

SCREEN SIZE: 10 inches from 660 to 670 feet
#7 stainless steel

10 inches from 680 to 730 feet

_____ inches from _____ to _____ feet

CASE SIZE: 16 inches from 0 to 200 feet

10 inches from 0 to 660 feet

10 inches from 670 to 680 feet

10 inches from 730 to 735 feet

GROUTING: Method Pressure pumped

Material Cement Depth 200 feet

PUMP: Type Turbine

Capacity 500 gal. per min

Depth of intake _____ feet

LOG

FURNISHED BY: Layne-Atlantic Co.

DATE: August 16, 1967

| DEPTH (feet) | | TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.) | REMARKS (water, caving, shot, screen, sample, etc.) |
|-----------------|-----|--|--|
| FROM | TO | | |
| 0 | 10 | Red clay | |
| 10 | 20 | Red and blue clay, fine to coarse sand, gravel | |
| 20 | 30 | Black clay and sand | |
| 30 | 60 | Black clay and some blue clay, black sand and gravel | |
| 60 | 95 | Dark blue clay, some gravel, some black sand | |
| 95 | 98 | Layer of gravel | |
| 98 | 140 | Blue clay, streaks of sand and gravel | |
| 140 | 142 | Layer of oyster shells | |
| 142 | 178 | Brown or red clay | |
| 178 | 200 | Oyster shell, gravel, dry clay, black sand | |
| 200 | 280 | Black sand and clay, some oyster shells | |
| 280 | 370 | Dry brown clay and some gravel | |
| 370 | 375 | Gray sand, fine to medium | |
| 375 | 407 | Multi-colored clay | |
| 407 | 465 | Brown clay, some large gravel | |
| 465 | 495 | Sand, fine to coarse | |
| 495 | 566 | Sand, clay and gravel | |
| 566 | 573 | Hard clay | |
| 573 | 647 | Sand, fine to coarse, lot of clay | |
| 647 | 655 | Almost pure clay | |
| 655 | 685 | Sand, fine to coarse, hard, lot of clay | |
| 685 | 745 | Gray sand, fine to coarse, some clay mixed in formation | |
| 745 | 770 | Multi-colored clay, lot of fine sand | |
| 770 | 780 | Sand, fine to coarse | |
| 780 | 807 | Clay with good bit of sand | |

INTERVAL SHEET

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VDMR Well No: 1953

Date rec'd: 9/1/67

Sample Interval: from 0' to: 807'

PROP: U. S. Naval Weapons Lab.
(Dahlgren #9)

Number of samples: 22

COMP: Layne-Atlantic Co.

Total Depth: 807'

COUNTY: King George (Dahlgren)

Oil or Gas: Water: ^X Exploratory:

| From-To | From-To | From-To | From-To |
|-----------|---------|---------|---------|
| 0 - 10 | - | - | - |
| 10 - 20 | - | - | - |
| 20 - 30 | - | - | - |
| 30 - 60 | - | - | - |
| 60 - 95 | - | - | - |
| - | - | - | - |
| 98 - 140 | - | - | - |
| - | - | - | - |
| 142 - 178 | - | - | - |
| 178 - 200 | - | - | - |
| - | - | - | - |
| 200 - 280 | - | - | - |
| 280 - 370 | - | - | - |
| 370 - 375 | - | - | - |
| 375 - 407 | - | - | - |
| 407 - 465 | - | - | - |
| - | - | - | - |
| 465 - 495 | - | - | - |
| 495 - 566 | - | - | - |
| 566 - 573 | - | - | - |
| 573 - 647 | - | - | - |
| 647 - 685 | - | - | - |
| - | - | - | - |
| 685 - 745 | - | - | - |
| 745 - 770 | - | - | - |
| 770 - 780 | - | - | - |
| 780 - 807 | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |

All intervals have both washed and unwashed samples.