

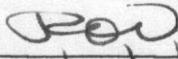
May 9, 1963

MEMORANDUM TO: Charles Sproul

FROM: R. O. Vernon, Director

The duPont disposal well near Highlands plant is at a depth of about 2,000 feet and will be cleaned out and deepened to 2,100 feet by this afternoon. The Schlumberger Corporation has run I.E.S. and sonic logs, and determined that brackish water was penetrated at depths of 1,820 to 1,900 feet. The company calculates that water having chlorides of 16,000 parts per million is present at 2,000 feet.

Casing is now set at 300 feet, and I feel that we should prepare a gamma ray log of the well. Please call Mr. Bill Few at the Highlands plant - telephone 964-7601 this afternoon and arrange to meet him sometime this week to complete the log.

  
Robert O. Vernon, Director

ROV:hp

*Carbow to Row 5°*

Seq. Oil

X ref. to Berdan,  
Jan

32302

September 30, 1963

Dr. Jean M. Berdan  
U. S. Geological Survey  
E-501 U. S. National Museum  
Washington 25, D. C.

RE: G-P&S-JMB

Dear Jean:

In reply to your letters of September 20, 1963, may I express my appreciation to you for the additional copy of the professional paper prepared by Dot Carroll. Mr. Babcock will retain this in his personal library.

In regard to the samples, which we have sent to you, we would not like to have all of the samples depleted, but would like to have approximately half of these returned to us. The remainder you may treat as yours, and if Dr. Schopf is willing to try to determine the spores and chitinozoa from the samples, he would certainly have our permission.

Cordially yours,

*Bob/v*

Robert O. Vernon

Dr. Robert O. Vernon  
State Geologist  
Florida Geological Survey  
2, D. Drawer 431  
Tallahassee, Florida

cc: Mr. Clarence Babcock  
ROV:mcn

Dear Bob:  
Thank you very much for the additional material from E. I. 148  
Dept. de Memoire Highlands Plant Waste Well No. 1, Clay County,  
Florida, depth 2,100-3,500 feet. I have taken a quick look at  
these samples, but still think that this well penetrated the  
Early Ordovician quartzitic sandstone-schistose shale unit  
which has been encountered in other wells in this part of  
Florida, as suggested in my letter of July 12, 1963. However,  
as some of the younger lithologies could resemble this,  
I would like your permission to send a selected cut of the  
black shale and sandstone samples to Dr. James H. Schopf of  
the U. S. Geological Survey, to be prepared for spores and  
chitinozoa. Do not call a member of the staff from  
any of the other Florida wells, and if a member  
might be able to locate the well, I will not

August 19, 1963

Miss Jean M. Berdan  
334 U. S. National Museum  
Washington 25, D. C.

*Jusp.*

Dear Miss Berdan:

On July 9, 1963, we sent you a Paleozoic sample from the E. I. du Pont de Nemours Highlands Plant Waste Well No. 1, located in Clay County, Florida; this sample was separated for your examination by Mrs. E. R. Applin. In the letter of transmittal we mentioned that we would send you a larger sample of this Paleozoic material at a later date.

Accordingly, we are mailing you today, under separate cover, a box containing several bags of the subject lithology; these bags were labeled by the E. I. du Pont de Nemours geologist. We hope this additional material will be helpful to you.

Yours very truly,

ROBERT O. VERNON

By: \_\_\_\_\_  
Clarence V. Babcock

ROV:bkg  
cc: Mrs. E. R. Applin

*Leg. Oil*

*+ ref. to Berdan, Jean*

Zip Code 32302

July 23, 1963

Dr. Jean Berdan  
U. S. Geological Survey  
Washington 25, D. C.

Dear Jean:

I am enclosing with this letter additional samples taken from the du Pont disposal well, about which we have had some previous correspondence. Upon completion of your study of these samples, I would like to have them returned to us for our files.

There may be a possibility of obtaining some additional materials; and, if any of it looks promising, we will have this sent to you, also.

Cordially yours,

Robert O. Vernon

ROV:hp

Enclosure

Zip Code 32302

July 17, 1963

Dr. Jean M. Berdan  
U. S. Geological Survey  
501 U. S. National Museum  
Washington 25, D. C.

Dear Dr. Berdan:

*Juvp.*

Thank you for your letter of July 12, 1963.

I am today writing to the du Pont geologist and requesting that he try to recover for us all materials containing the Ordovician rock. If he does have additional materials, I will have these forwarded to you.

Cordially yours,

Robert O. Vernon

ROV:mcn

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IN REPLY REFER TO:

G-P&S-JMB

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
WASHINGTON 25, D. C.

501 U. S. National Museum

July 12, 1963

Dr. Robert O. Vernon, State Geologist  
Florida Geological Survey  
P. O. Drawer 631  
Tallahassee, Florida 32302

Attention: Mr. Clarence Babcock

Dear Dr. Vernon:

The sample from 3,509 feet in the E. I. du Pont de Nemours Highlands Plant Waste Well No. 1, picked by Mrs. E. R. Applin, has been received, and I have given it a preliminary examination. The lithologies represented seem to agree with those in other wells in Florida and Alabama dated as Early Ordovician by means of fossils. In addition, the fragment of a fossil found by Mrs. Applin appears to be part of a large phosphatic brachiopod of a type that is fairly common in the Early Ordovician of Florida. Therefore, although the material is too scanty to permit a positive determination of its age, my best guess would be Early Ordovician. I greatly appreciate receiving this sample, and hope that it will be possible to send me additional material when it becomes available.

Very truly yours,

*Jean M. Berdan*

Jean M. Berdan

*Lingulasma sp (Applin)*

*July 12, 1963*

**RECEIVED**

**JUL 17 1963**

**FLORIDA GEOLOGICAL SURVEY  
TALLAHASSEE**

Zip Code 32302

July 9, 1963

Miss Jean M. Berdan  
334 U. S. National Museum  
Washington 25, D. C.

Dear Miss Berdan:

*Lucy*

Enclosure: Paleozoic sample from a depth  
of 3,509 feet in the E. I. du Pont  
de Nemours Highlands Plant Waste  
Well No. 1, Clay County, Florida.  
(500' N and 301' W SE Cor. SW 1/4  
Sec. 17, T5S, R23E)

The enclosed sample was separated for your examination by Mrs. E. R. Applin, who has requested that we send it to you. It was taken at the bottom of the hole at a depth of 3,509 feet; the top of the Paleozoic section, according to the penetration log, was reached at 3,487 feet. In the near future we will receive and have washed a larger bottom-hole sample which we plan to send you, also.

Mrs. Applin's preliminary examination of the enclosed material showed it to consist of quartzite associated with black shale stringers. She asked that we mention that she even found part of a fossil.

We would very much appreciate hearing from you relative to any determinations you should make on this sample.

Mrs. Applin send you her regards. At the present time she is working as a consultant for the U.S.G.S. and is examining some of the well cuttings in our files.

Yours very truly,

Robert O. Vernon

By ~~Georges Babcock~~

ROV:bhp

RECEIVED

MAY 17 1963

DIVISION OF GEOLOGY

May 15, 1963

RECEIVED  
MAY 1  
DIVISION OF GEOLOGY

Mr. W. G. Few  
E. I. Dupont de Nemours Company  
Box 68  
Lawtey, Florida

Dear Mr. Few,

This letter presents a summary of the information found from our logs and tests of May 8 and May 10, 1963, on your Waste Well #1, Highlands Plant, Florida.

Determinations of porosity (by Sonic Log) and ppm equivalent NaCl (by resistivity measurements) at varying depths are as follows:

Depth, ft.	Porosity, %	Resistivity of Water, ohm m <sup>2</sup> /m	Equivalent NaCl ppm
1877	26	8.0	< 700
1892	32	12.5	500
1913	36	9.7	600
1993	33	0.70	6800
2000	27	0.57	8100
2007	27	0.50	9300
2015	15	0.32	15500
2021	22	0.32	15500
2028	25	0.31	16000
2036	28	0.30	16500

From these measurements it is apparent that the interval from 1810' to 1948' contains water that is reasonably fresh. The interval below 1990', however, contains water with 6800 to 16500 ppm equivalent NaCl. The salinity increases with increasing depth.

The formation tester was run in an effort to recover formation water from the interval below 1990'. The third attempt was successful at a depth of 2028'. The water recovered was, as anticipated, a mixture of formation water and drilling fluid filtrate which had invaded the formation. The effects of this mingling of the two waters can be seen by the comparison below.

	Resistivity ohms m /m @100	Equivalent NaCl ppm	NaCl ppm Actual (by Chloride Det.)
Drilling Fluid	2.63	1450	580
Recovered Sample	1.72	2400	825
Formation Water	0.28	16000	-

(Determined from logs)

Page #2  
Mr. W. G. Few

From the formation test, two things are concluded.

- 1) NaCl by Chloride determination is approximately 35% of equivalent NaCl by resistivity measurements. The remaining salinity would be due to the presence of other salts.
- 2) The recovered sample was composed of approximately 5% formation water and 95% drilling fluid filtrate. It is unfortunate that the sample contained such a small portion of formation water and, therefore, did not show a high salt content. The calculations presented at the beginning of this letter, however, give adequate evidence of the salinities in the interval below 1990'.

It is hoped that this information will meet your needs. We appreciate having worked with you, and trust that you will call on us again.

*John D. Cunningham*

John D. Cunningham

*ESD*  
ELO/bp

cc: Mr. A. C. Barlow  
Dr. R. O. Vernon, State Geologist  
Mr. David Lee, Bureau of Sanitary Engineering

This interpretation represents our best judgment. Nevertheless since all interpretations are opinions based solely on inferences from electrical or other measurements, we cannot and do not guarantee the accuracy or correctness of any interpretation and shall not be liable or responsible for any loss, cost, damages, or expenses that may be incurred or sustained resulting from this or any other interpretation.



IN REPLY REFER TO:

G-P&S-JMB

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
WASHINGTON 25, D. C.

E-501 U. S. National Museum

September 20, 1963

Dr. Robert O. Vernon  
State Geologist  
Florida Geological Survey  
P. O. Drawer 631  
Tallahassee, Florida

Attention Mr. Clarence Babcock

Dear Bob:

Thank you very much for the additional material from E. I. du Pont de Nemours Highlands Plant Waste Well No. 1, Clay County, Florida, depth 3,400-3,500 feet. I have taken a quick look at these samples, and still think that this well penetrated the Early Ordovician quartzitic sandstone-micaceous shale unit which has been encountered in other wells in this part of Florida, as suggested in my letter of July 12, 1963. However, as some of the younger lithologies could resemble this, I would like your permission to send a selected cut of the black shale and sandstone samples to Dr. James M. Schopf of the U. S. Geological Survey, to be processed for spores and chitinozoa. He got quite a number of these microfossils from some of the other Florida wells, and it is possible that he might be able to determine the age of the rocks in this one more surely than I can do on the lithology alone. I will not send him any of the material, however, until I hear from you that it is alright, as I understand that his methods of preparation completely destroy the sample.

I am enclosing a copy of a recent Professional Paper by Dorothy Carroll on the petrography of some of the Paleozoic rocks in Florida. You have probably seen this already, but might like an extra copy.

Sincerely yours,

*Jean M. Berdan*

Jean M. Berdan