

Field Trip
Memorandum No. 6

Feb. 13-18, 1969, inclusive

Trip To: Durham, No. 1 Monticello Drug Co. et al well

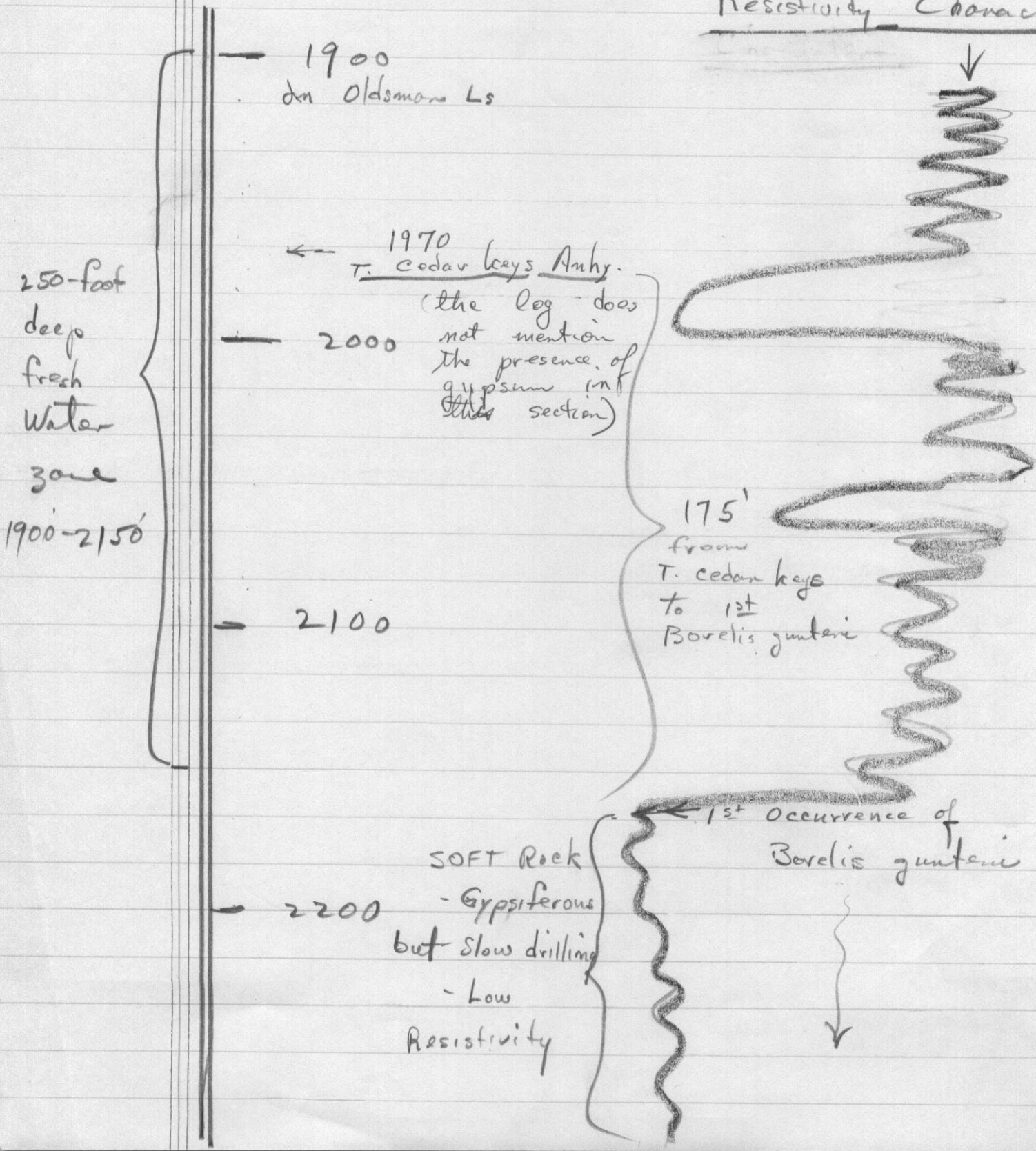
Subject: Discussion of some of the geologic tops of USGS log D-320 (attached) on the well which discovered the deep fresh water zone at Jacksonville. This zone occurs in the base of the Oldsmar Limestone and in the top of the Cedar Keys Anhydrite reached at 1970 feet. The interval of the deep fresh water zone is 1900-2150 feet. The well is located approximately in Section 29, T2S, R27E, Duval County. Log D-320 was supplied by Mr. Warren Leve.

Discussion: 1. Lake City Formation. This top is an uncemented coquina of good Dictyoconus americanus specimens.

2. Cedar Keys Anhydrite. This top occurs in a very resistive zone which is 175 feet above the first occurrence of Borelis gunteri; Much of the Borelis zone is gypsiferous; the rock looks soft, but it drills slowly; the rock has very low electrical resistivity.

The attached sketch shows some of the relationships mentioned herein

Approximate
Resistivity Character



Field Trip
Memorandum No. 5

Feb. 13-18-, 1969, inclusive

Trip To: Durham, No. 1 Monticello Drug Co. et. al well

Subject: Proposed mechanical logging program for the subject test.

Discussion: Mr. Dub Hudson, Consulting Engineer for Durham, said that at this time he intends to make two electric log runs, if intermediate casing is set. One run would be before that casing is emplaced; and the other would be made of the section below the intermediate casing seat, and at the time the hole reaches final total depth. It thus appears that the Division of Geology will have resistivity coverage as an aid in picking the fresh water-salt water contact.

Mr. Gordon Utter, Consulting Geologist for Durham, stated that a Sonic log, and perhaps drilling time, will be made available to the State. These porosity tools will facilitate verification of the presence in this well of the deep fresh water zone discovered by the USGS in Well No. D-320. It is anticipated that the subject interval in the Durham well will be characterized by good porosity associated with high resistivity (caused by fresh water.)

Probably a Gamma-Ray-Neutron log will be run in the Durham hole, also, to facilitate correlations and verify other porosity indications.

Field Trip
Memorandum No. 4

Feb. 13-18, 1969, inclusive

Trip To: Durham, No. 1 Monticello Drug Co. et al well

Subject: Alternative possibilities for plugging this test so it can be used as a monitor well by the USGS.

Discussion: Mr. Warren Leve, USGS, stated that a deep fresh water zone occurs in Well No. D-320, from 1900-2150 feet of depth; this zone is overlain and underlain by salt water zones. Well No. D-320 is located near the eastern bank of the St. Johns River and in the City proper of Jacksonville, and it is about 12 miles ESE of the Durham test. Mr. Leve would like the operator to turn the Durham test over to the USGS, so it can be used as a monitor well for the deep fresh water zone discovered in Well No. D-320.

^{Three}
~~Two~~ considerations in connection with the conversion of the Durham well to use as a monitor well are:

1. The ideal depth of setting of the intermediate casing (7 5/8-inch) for the purpose of a monitor well would be just above 1900 feet, which is the top of the fresh water zone. Then the casing would protect the zone from the overlying salt water, and the emplacement of cement below the zone would protect it from underlying salt water. It must be noted, however, that probably much of the annulus below the surface casing seat would not be cemented, unless returns were established; and the establishment of returns in the setting of this intermediate casing would entail unjustifiable expense from an operating point of view.

Mr. Gordon Utter, Consulting Geologist for Durham, stated that if drilling developments dictated the necessity of setting an intermediate string in the vicinity of 1900 feet, he would select this depth rather than another that would not be as suitable for conversion of the hole to use as a monitor well.

2. If no intermediate casing is used in this hole, or if drilling developments (primarily, a zone of lost circulation) dictate that it be set far above the subject fresh water zone, there would be no way of ideally converting this well by the use of cement only, to use as a monitor well for the deep fresh water zone. It appears possible that the fresh water zone will not have a stronger head than the hydrostatic head, and that the heavy salt water would sink to contaminate the fresh water zone.

3. In the rather improbable event that the intermediate string is set far below the deep fresh water zone, it would appear that the USGS might be able to convert this hole to use as a monitor well without great expense. It may be possible that the casing could be cut ~~below the zone~~

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Memorandum No. 4 (contd)

below the zone to be monitored. Then the casing could probably be pulled upward, recovering casing as pulled out of the hole until the bottom of the string was at a point somewhat higher than 1900 feet, which is the top of the fresh water zone. Then cement could be placed in the hole, above the fresh water zone, and allowed to set; at this point the severed casing string could be lowered to rest on this cement bottom, and then the casing seat could be cemented, with cement returns to the surface established if possible. Subsequently, the cement at the bottom of the hole could be drilled out. And finally, the cement plug below the fresh water zone could be set.

Field Trip
Memorandum No. 3

Feb. 13-18, 1969, inclusive

Trip To: The Durham, No. 1 Monticello Drug Co. et al well

Subject: Different techniques for penetrating and casing the zone of lost circulation by the Duval Well Drilling Co., and by Fortenberry Drilling Co., respectively. The first contractor drilled the water well at the subject location; and the second company is drilling the oil test.

Discussion: Since the Duval Well Drilling Co. has a relatively small rotary rig, with a rather small pump delivery, this contractor thought that if the part of the hole characterized by cavities were drilled with no returns throughout, then it might slough in before the casing could be set. Therefore, at a depth of 267 feet they set in the hole 2,000 pounds of cement, and 2,000 pounds of gel; this sealed off the cavities. The cement and gel were then drilled, and from this point down to the seat of the surface casing, returns were obtained.

Because of the larger pumps on the Fortenberry rig, on the other hand, the operator felt that the entire section extending from the seat of the conductor pipe to the surface casing seat could be drilled without stopping to cement off cavities. In other words, it was felt that after the subject interval was drilled, the hole would not slough in to prevent the setting of the surface casing. This procedure is being followed, and because of it, returns will not be recovered from the top of the cavity zone, at about 120 feet, to the seat of the surface casing, between 500 and 600 feet of depth

Field Trip
Memorandum No. 2

Feb. 13-18, 1969, inclusive

Trip To: The Thomas A. Durham, No. 1 Monticello Drug Co. and St. Regis Paper Co. test, located in section 23, T1S, R24E, Duval County. This places the test about 12 miles WNW of Jacksonville; the proposed depth of the well is 4,500 feet.

Subject: Conveyance of instructions to representatives of the operator, and of the contractor.

Discussion: After discussing the matter with Mr. Dub Hudson, consulting engineer for Thomas A. Durham, operator, the writer informed Mr. Smokey Hood, tool pusher for Fortenberry, that the Division of Geology wants to be notified before the well is to be plugged so that an agent can be sent to witness the entire plugging operation. Both Mr. Hudson and Mr. Hood said that such notification would be given. Mr. Hood said he will give us a call when Schlumberger is called to log the well.

Mr. Hudson said that when a sample is recovered for the operator, a sample will be saved for the State. The operator will attach a flow line to the 10 3/4-inch casing, and at that time the shale shaker will be installed. The 10 3/4-inch casing will be set below the top of the Ocala and between 500 and 600 feet of depth. In drilling toward this proposed casing seat, a lost circulation zone was encountered at about 120 feet; beyond this point returns could not be established, and finally, at 340 feet, deepen penetration became impossible. It now appears that the surface hole may not be drilled before Thursday, February 20, or later.

The two reasons the flow line and shale shaker were not installed on the 16-inch conductor pipe, to facilitate returns below that point, are:

- 1) Below the 16-inch casing seat the extensive lost circulation zone revealed by the water well would have prevented all returns down to the 10 3/4-inch casing seat.
- 2) The water well was drilled with a smaller rig, using different techniques with respect to the lost circulation zone (see Memorandum No. 3) and therefore the water well was able to recover samples below 267 feet. The writer brought back these samples to the office; they extend from surface

Field Trip

Memorandum No. 2 (contd)

to 708 feet (T. D.), and are at 20-foot intervals with the exception of the lost circulation zone from 120-267 feet. Also, a log of these samples, with tops, prepared by the office of Mr. Warren Leve, USGS, was returned, and is an attachment to this memorandum. Consequently, we did not need additional duplicate samples of this interval from the oil test.

REC'D.: 2/18/69
Name:

Water Well

Durham, No. 1 Monticello Drug Co.
and St. Regis Paper Co.

Location: Sec 20 T15-R24E

1980' W of E line
and

660' S of N line
of the section

WELL LOG

Well: D-337 16 Digit No.: 302416N0815226.1

Owner: Monticello Drug Co. & St. Regis Paper Co.

Depth: 708' Casing Depth: 416' Diameter: 6"

Contractor: Duval Well Drilling Co.

Duval Co.

DEPTH (Feet) SOIL

0-2	<u>Sand</u> --Tan, med. to fine qtz., also flakes of black organic material from soil
2-62	<u>Same</u> -- 2-25--Dark rusty brown with iron oxide stain, also frags. of indurated hardpan 25-62--dark rusty brown, iron oxide stained hardpan, contains root casts or worm borrows as concretion with siliceous cement-hard- also few frags. of pelecypod replaced by siliceous iron oxide
62-105	<u>Sandy Clay</u> --light grey with fine qtz. sand in a clay matrix, thin streak of white chalky calc. clay with soft, white limestone at 102-105
105-114	<u>Clay</u> --moderately stiff with white chalky streak of calc. clay--thin streak of moderately hard, tan limestone at 108-109--soft clay 109-110--limestone 110-114 becoming hard at 114, few very small forams
114-120	<u>Limestone</u> --grey & tan mottled, med.-grained, bioclastic, porous--also, grey, cryptoxylin, mod. hard, non-porous limestone, ostracods & poorly preserved moluskan fragments
120-122	<u>Cavity</u>
122-136	<u>Grey Marl</u>
136-146	<u>Hard Limestone</u>
146-170	<u>Grey Marl</u>
170-180	<u>Med. Hard Limestone</u>
180-198	<u>Grey Marl</u>

198-200	<u>Limestone</u>
200-260	<u>Grey Marl</u>
260-262	<u>Limestone</u>
262-266	<u>Grey Marl</u>
266-267	<u>Limestone</u>
267-290	<u>Sandy Clay</u> --light grey, with coarse grains of qtz. & black polished phosphate, predominant sand size med. to fine thin limestone streak from 270-275
290-334	<u>Clayey Sand</u> --grey to greenish grey, phosphatic- sharks teeth
334-354	<u>Sandy Clay</u> --olive green, phosphatic--also few frag- ments of soft, tan, cryptoxylin lime- stone
354-376	<u>Limestone</u> --moderately hard, non-porous light grey, sandy limestone--sand size ranges from fine to coarse with abundant gran- ules & pebbles of well rounded qtz. and phosphate
376-380	<u>Same</u> --very hard, non-porous, light grey sandy limestone
380-386	<u>Same</u> --soft, white, chalky, sandy limestone
386-390	<u>Same</u> --light grey, sandy, hard, non-porous lime- stone--consists of med. to fine, qtz. & phosphate sand in a sugary calc. matrix, no fossils
390-400	<u>Same</u> --coarser sand content, sharks teeth
400-416	<u>Same</u> --Med. hard limestone
416-422 Top Ocala	<u>Change</u> --white massive broclastic ls. porous with bryozoans & shell frag., <u>no</u> typical ocala forams
422-444	<u>Same</u> --white broclastic ls., bryozoan--some small forams (Robulus?)
444-466	<u>Same</u> --small lepidocyclina
466-488	<u>Same</u> --more ocala forams
488-510	<u>Same</u> --slight color change <u>more whitish</u> , bro- clastic--massive porous ls. with bryozoan & shell & small ocala forams, Cry. river

- 510-532 Same
- 532-554 Same--but many rounded forams-(Williston type but no
pinarenses) slight texture change - less massive,
more mealy-granular
- 554-576 Same--many small rounded forams (Williston type but
no pinarensis)
- 576-598 Same--
- 598-630 Same--! pinarensis?? small
- 630-645
Top Inglis Change--honey brown sugary textured calcitic ls or dolomite,
crystalline but soft--easily broken,
no recognizable forams, material crystalline
with sugary texture, porous
- 645-664 Change--light tan to grey calcitic granular but massive
limestone (not mealy), in consolidated pieces, number of small pinarensis
- 664-686 Same--with newberryensis & pinarensis--pieces are
fairly hard
- 686-708
Top Avon Pk. Change--hard honey brown crystalline sugar to hard
texture ls. or dolomite

FIELD TRIP
MEMORANDUM No. 7

February 13-18, 1969, inclusive

Trip to: Durham, No. 1 Monticello Drug Company, et al well*

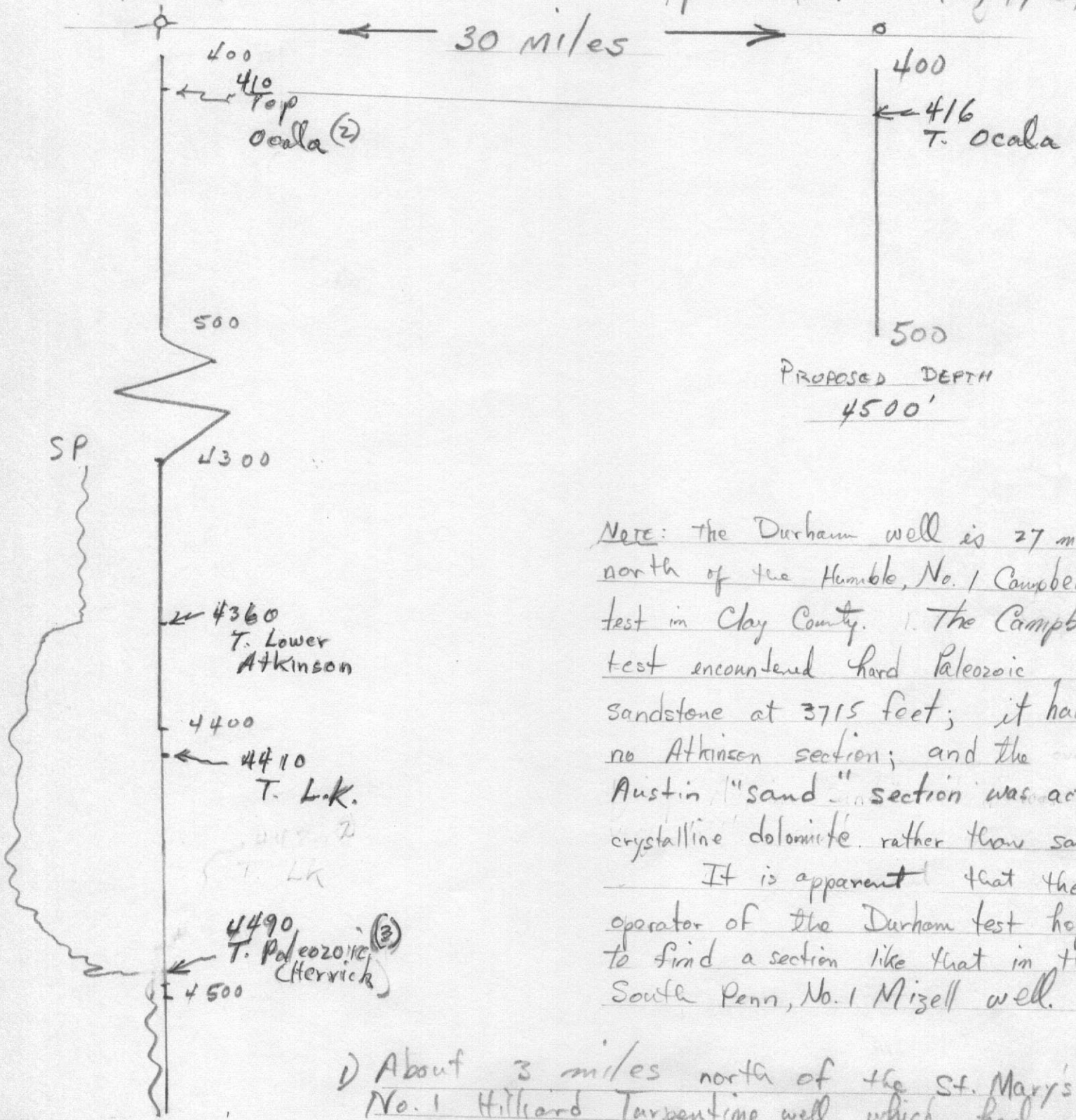
Subject: Tops of the South Penn, No. 1 Mizall well, and other data,
and relationship to the Durham test.

Discussion: The subject matter is presented in the attached sketch. It
will be noted that apparently the Durham well is being drilled
primarily to test the Basal Atkinson Sand (50'), and Upper
Lower Cretaceous sands (80'). The Lower Cretaceous is
underlain by black shale reported by Herrick to be of
Paleozoic age.

*Confidential well

SOUTH PENN
 No. 1 Mizell
 Charlton Co., Georgia ①
 Compl., 1963

DURHAM, No. 1 Monticello Drug
 Duval Co., Fla.
 Sec. 23 - T15 - R24E
 Spudded Feb. 13, 1969



NOTE: The Durham well is 27 miles north of the Humble, No. 1 Campbell test in Clay County. The Campbell test encountered hard Paleozoic sandstone at 3715 feet; it had no Atkinson section; and the Austin "sand" section was actually crystalline dolomite rather than sand.

It is apparent that the operator of the Durham test hopes to find a section like that in the South Penn, No. 1 Mizell well.

1) About 3 miles north of the St. Mary's No. 1 Hilliard Turpentine well, which had no electrical logs.

2) Picks by operator unless otherwise indicated

3) Black shale

T.D. 4577
 in sediments

Field Trip Memorandum No. 1

by CVB

File in

Feb. 13-18, 1969, inclusive

Trip TO: Durham, No. 1 Monticello Drug Co. et al well

Subject: Status of operations

Discussion: The operator set the 16-inch conductor pipe at about 116 feet. Returns were obtained.

In drilling the surface hole, returns were lost at about 120 feet. Drilling continued, without returns, to 340 feet, where deeper penetration was impossible due to the accumulation in the hole of cuttings. The operator will use cotton seed hulls in an attempt to seal off the cavities, and commercial mud to return the cuttings to the surface. It is hoped that the surface casing can be set below the top of the Ocala, and between 500 and 600 feet of depth.