

PRELIMINARY LITHOLOGIC LOGS FOR THREE STRATIGRAPHIC TEST HOLES IN JACKSON COUNTY, MISSISSIPPI

By Gregory S. Gohn, Juergen Reinhardt, and John A. Garrison, Jr.

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic Code.



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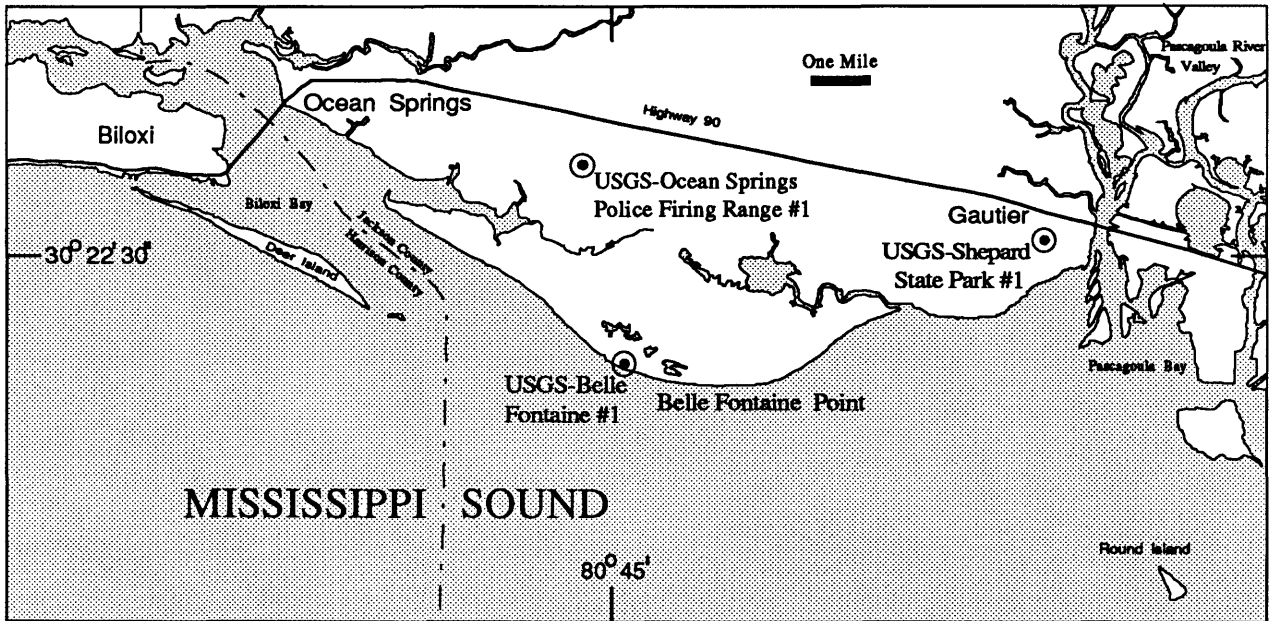
INTRODUCTION

Three 170- to 175-ft-deep stratigraphic test holes were completed by the U.S. Geological Survey during the Spring of 1990 in Jackson County, Mississippi. These continuously cored holes were drilled as part of a field study of the Neogene and Quaternary sections of the Mississippi coastal area. This report provides lithologic descriptions of the recovered cores and copies of the gamma-ray logs for the three holes.

The three coreholes are designated as USGS-Belle Fontaine No.1 (BelF No. 1), USGS-Ocean Springs Police Firing Range No. 1 (OSPD No. 1), and USGS-Shepard State Park No. 1 (SSP No. 1). The holes are located in southern Jackson County between the town of Ocean Springs and the Pascagoula River valley (fig. 1). BelF No. 1 was drilled on a Sangamon barrier complex (Gulfport Formation; Otvos, 1982, 1991) at a site just behind the modern shoreline on Belle Fontaine Beach. OSPD No. 1 and SSP No. 1 were drilled further inland on the coastal terrace underlain by the Pleistocene Prairie Formation (Otvos, 1982, 1991). Additional location information is given with the lithologic descriptions and the gamma-ray logs.

¹Deceased.

²U.S. Geological Survey Junior Fellow Program, 1992.



LITHOLOGIC DESCRIPTIONS

Brief, general descriptions of the Jackson County cores were made by J. Reinhardt shortly after the 1990 drilling program was completed; subsequently, more complete descriptions were made by G.S. Gohn and J.A. Garrison, Jr. during the Spring and Summer of 1992. Unfortunately, the cores had completely dried before the 1992 descriptions were begun, which resulted in some disaggregated core segments and a general reduction in the level of detail that could be discerned about the textures, fabrics, and structures that are present in the cores.

In the following core descriptions, assessments of grain sizes and sorting, mineral percentages, and colors are all semiquantitative visual estimates made using standard charts and visual aids. All of the indicated colors describe completely dry samples.

GEOPHYSICAL LOGS

Geophysical logs were run in the three coreholes by the Mississippi Bureau of Geology. Natural gamma-ray logs and three-point electric logs (spontaneous potential, short- and long-normal resistivity) were run in each hole. The gamma-ray logs accompany the lithologic logs for each of the coreholes in this report.

Some inconsistencies were noted in the orientations of data curves on the available printouts of the gamma-ray logs. The curve for BelF No. 1 appears to be displayed "backwards" when compared to the lithologies seen in the core. For example, a loose, well-sorted quartz sand at depths of 47.5 ft to 76.0 ft in the core is represented by the highest radioactivity values seen on the gamma-ray log; this curve signature is typical of a clay and not a well-sorted quartz sand that lacks obvious concentrations of radiogenic detrital minerals.

The quartz sand (and all of the other lithologies in the core) can be reconciled with the gamma-ray log only if the log is "flipped over" to produce its mirror image.

The data curve on the gamma-ray log for SSP No. 1 appears to be correctly oriented when compared to lithologies in the core. However, an arrow placed on the log at the top of the curve incorrectly indicates that the radiation values increase to the left. The gamma-ray log for OSPD No. 1 appears to be correctly oriented.

In addition to corrections in curve orientations, changes were made in the position of the curve on each log relative to its depth scale. These changes made the depths of contacts seen on the gamma-ray logs correspond more closely to the depths of contacts seen in the cores, which generally correspond closely in depth to contacts seen on the electric logs.

REFERENCES

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Guidebook, New Orleans Geological Society 1982 Field Trip, New Orleans

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Otvos, E.G., 1991, Northeastern Gulf Coast Quaternary, *section in* Quaternary geology of the

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USGS-Belle Fontaine #1 Corehole
Jackson County, Mississippi

Section 13, Township 8S, Range 8W
SW1/4, NE1/4, Section 13
Gautier South 7-1/2 minute quadrangle

Surface elevation: 6 feet
Total depth: 175 feet
Available logs: gamma-ray, electric

Footage:

0 - 3' 4"	No recovery.
3' 4"-4' 0"	SAND, fine to medium, well-sorted, loose, common modern rootlets, no acid fizz, yellowish-gray (5Y8/1). Basal contact not seen.
4' 0"-5' 0"	SAND, very fine to coarse, silty and clayey, friable, no fossils noted, no acid fizz, texture and color mottled (burrows or root casts filled with better sorted fine to coarse sand), brownish-gray (5YR4/1) and yellowish-gray (5Y8/1). Basal contact is sharp and irregular.
5' 0"-5' 9"	SAND, very fine to medium, 5% coarse, well-sorted, loose, no fossils noted, no acid fizz, yellowish-gray, (5Y8/1). Basal contact is sharp and flat.
5' 9"-7' 1"	SAND, very fine to coarse, silty and clayey, friable, no fossils noted, no acid fizz, texture and color mottled (burrows or root casts filled with better sorted fine to coarse sand), brownish-gray (5YR4/1) and yellowish-gray (5Y8/1).
7' 1"-9' 0"	No recovery.
9' 0"-10' 6"	SAND, very fine to coarse, silty and clayey, friable, common disseminated plant material (sand-sized), no acid fizz, texture and color mottled (burrows or root casts filled with better sorted fine to coarse sand), brownish-gray (5YR4/1) and yellowish-gray (5Y8/1). Basal contact is sharp and irregular.
10' 6"-10' 9"	CLAY, silty, no fossils noted, no acid fizz, common irregular bodies of very fine to medium sand (burrows?), clay - dark greenish-gray (5GY4/1), sand - light-brownish-gray (5YR6/1).
10' 9"-14' 0"	No recovery.
14' 0"-15' 11"	CLAY, sandy (very fine to medium), compact, dense, sparse rootlets, common disseminated plant material (sand-sized to 0.25 inch), no acid fizz,color and texture mottled; sparse burrows (unlined, branching sand-filled), very light gray (N8) to medium-gray (N5) mottled with light brown (5YR5/6).

- 15' 11"-19' 0" No recovery.
- 19'0"-22'9" SAND, very fine to medium, locally very fine to coarse, silty, friable, mica (trace to 1%, very fine-fine), sparse to locally common rootlets, very sparse mollusk fragments (chalky, sand-sized) in basal 3 inches, faint acid fizz, mottled pale-yellowish-brown (10YR6/2) and very pale orange (10YR8/2).
- 22'9"-24'0" No recovery.
- 24'0"-24'9" SAND, very fine to fine, 5% medium to coarse, silty and clayey (10-20%), mica (trace to 1%, very fine to fine), sparse to locally common rootlets, no acid fizz, mottled pale-yellowish-brown (10YR6/2) and very pale orange (10YR8/2).
- 24'9"-25'0" Broken core. Complex mixture of noncalcareous sand as above and calcareous sand as below 25'2".
- 25'0"-25'2" Abundant WOOD and PLANT fragments up to 1.5 inches in very fine to fine SAND as in 19'0"-24'9".
- 25'2"-25'9" SAND, very fine to coarse, well-sorted, friable, sparse disseminated shell fragments (sand-sized), strong acid fizz, massive, yellowish-gray (5Y7/2).
- 25'9"-29'0" No recovery.
- 29'0"-34'11" SAND, very fine to medium, locally very fine to coarse, moderately well sorted, friable, sparse to locally abundant macrofossils (sand-sized to 0.25 inch), common microfauna, strong acid fizz, very sparse plant fragments (trace to 1%, sand-sized), abundant wood fragments (up to 1.75 inches) at 34'6" to 34'8", massive, medium-light-gray (N6) to light-olive-gray (5Y6/1) mottled with light brown (5YR5/6). Basal contact is gradational. Greenish-gray (10GY5/2) fossiliferous clay (0.5-inch thick) at 32'7" and several thin (less than 0.5 inch) clay beds or lenses in broken core in top foot of interval.
- 34'11"-36'2" CLAY, silty, sparse to locally common macrofossils (sand-sized to whole valves) and microfossils, strong acid fizz, two burrow types - 1) irregular pockets of macrofossiliferous, very fine to fine or locally very fine to coarse sand, and 2) cylindrical, subvertical, unlined sand-filled (very fine-fine) burrows, clay - greenish-gray (10GY5/2), sand - light-olive-brown (5Y6/1) mottled with light brown (5YR5/6). Basal contact is sharp but irregular due to burrowing.
- 36'2"-36'7" SAND, very fine to medium, moderately well-sorted, friable, sparse to locally common macrofossils (sand-sized to whole valves) and microfossils, strong acid fizz, massive, mottled olive-gray (5Y4/1) and light-olive-gray (5Y6/1). Basal contact is sharp but irregular due to burrowing.

- 36'7"-37'2" CLAY, silty, sparse to locally common macrofossils (sand-sized to whole valves) and microfossils, strong acid fizz, two burrow types - 1) irregular pockets of macrofossiliferous, very fine to fine or locally very fine to coarse sand, and 2) cylindrical, subvertical, unlined sand-filled (very fine-fine), clay - greenish-gray (10GY5/2), sand - light-olive-brown (5Y6/1) mottled with light brown (5YR5/6). Basal contact is sharp but irregular due to burrowing.
- 37'2"-37'5" SAND, very fine to fine, silty, friable, abundant macrofossils (sand-sized to whole valves) and microfossils, strong acid fizz, light-olive-brown (5Y6/1) mottled with light-brown (5YR5/6). Basal contact is sharp and irregular (burrowed?).
- 37'5"-39'0" CLAY, silty, sparse to locally common macrofossils (sand-sized to whole valves) and microfossils, strong acid fizz, two burrow types - 1) irregular pockets of macrofossiliferous, very fine to fine or locally very fine to coarse sand, and 2) cylindrical, subvertical, unlined sand-filled (very fine-fine) burrows, clay - greenish-gray (10GY5/2), sand - light-olive-brown (5Y6/1) mottled with light brown (5YR5/6). Basal contact at end of drilling run, not seen.
- 39'0"-41'0" SAND, very fine to medium, locally very fine to coarse, slightly silty and clayey, loose to friable, sparse to locally common macrofossils (sand-sized to whole valves) and microfossils, no fossils noted in basal 4 inches, moderate acid fizz, texture and color mottling suggests bioturbation, light-olive-gray (5Y6/1) mottled with very pale orange (10YR8/2).
- 41'0"-44'0" No recovery.
- 44'0"-44'5" SAND, very fine to very coarse, 3% granules, not clayey but sand fraction poorly sorted, loose, no fossils noted, no acid fizz, grayish-orange (10YR7/4), possibly contamination at top of core barrel. Basal inch of core removed prior to description.
- 44'5"-44'11" SAND, very fine to fine, well-sorted, loose to friable, abundant macrofossils (sand-sized to whole valves) and microfossils, shells tend to be aligned horizontally, 0.5-inch-thick shell concentration at center of interval, strong acid fizz, suggestion of horizontal bedding, light-brownish-gray (5YR6/10). Basal contact removed prior to description..
- 44'11"-45'2" CLAY, silty, common macrofauna (sand-sized) and microfauna, strong acid fizz, one vertical burrow (sand-filled, unlined, 0.6-inch diameter), light-olive-brown (5Y5/6). Basal contact is sharp.
- 45'2"-45'6" SAND, very fine to medium, well-sorted, loose to friable, common macrofauna (sand-size to 0.25 inch, mostly broken) and microfauna, strong acid fizz, light-olive-gray (5Y6/1). Basal contact is sharp but irregular from burrowing.

- 45'6"-47'2" CLAY, silty, locally sandy (very fine-fine) in basal foot, common to abundant macrofossils (sand-sized to whole valves) and microfauna, strong acid fizz, texture mottled - irregular areas of shelly, very fine to fine sand are probable burrows, greenish-gray (10GY5/2). Basal contact is gradational across 1 inch.
- 47'2"-47'6" SAND, very fine to medium, silty and clayey, loose to friable, abundant macrofossils (sand-sized to whole valves), strong acid fizz, greenish-gray (5GY6/1). Basal contact is disrupted, probably gradational across less than 1 inch.
- 47'6"-48'0" SAND, very fine to fine at top grades down to very fine to medium, well-sorted, friable, no fossils noted, no acid fizz, very pale-orange (10YR8/2) at top, pale-brown (5YR5/2) mottled with yellowish-gray (5Y8/1) below.
- 48'0"-49'0" No recovery.
- 49'0"-57'0" SAND, very fine to fine, locally very fine to medium, well-sorted, loose, very sparse disseminated mollusk fragments (sand-sized), sparse scattered plant fragments (sand-sized to 0.5 inch), plant material is abundant at 55 ft to 57 ft with a concentration of wood fragments at 55.9 ft to 56.2 ft, massive, grayish-pink (5R8/2) to locally very pale-orange (10YR8/2).
- 57'0"-58'0" No recovery.
- 58'0"-76'0" SAND, fine to medium at top coarsens downward to fine to very coarse, well-sorted, loose, no fossils noted, no acid fizz, slightly indurated at 68 ft to 69 ft and at 74 ft-6 inches to 75 ft, common tabular clay intraclasts (light-gray-N7, up to 0.5 inches) and very sparse phosphate and chert (fine gravel) in basal 2 inches, locally with faint indications of planar, horizontal and low-angle, thin bedding, grayish-pink (5R8/2). Basal contact is sharp and irregular with a minimum 1-inch relief.
- 76'0"-80'0" CLAY, silty, dense, brittle, no fossils noted, no acid fizz massive, light-greenish-gray (5G8/1) at top grades down to grayish-yellow-green (5GY7/2) at bottom. Basal contact apparently at break between core segments.
- 80'0"-82'6" SAND, very fine to coarse, 1% very coarse in basal 6 inches, moderately well-sorted, friable, no fossils noted, no acid fizz, massive, yellowish-gray (5Y7/2).
- 82'6"-98'0" CLAY, silty, dense, brittle, very sparse plant fragments (sand-sized), no acid fizz, common microfractures (many slickensided), faint vermicular color mottling in basal 3 ft, yellowish-gray (5Y7/2) to grayish-yellow-green (5GY7/2), stained dusky yellow (5Y6/4) to moderate yellow (5Y7/6) along fractures; siltier at 83'6" to 84'6" and at 90'0" to 92'0", pale olive (10Y6/2). Basal contact is broadly gradational from 97 ft to 99 ft.

- 98'0"-108'6" SILT to SAND, very fine, clayey, mica (trace, very fine), friable, sparse disseminated plant material (sand-sized), no acid fizz, texture and color mottled, grayish-yellow (5Y8/4) mottled with moderate yellow (5Y7/6). Basal contact is broadly gradational from 108 ft to 109 ft.
- 108'6"-111'0" SAND, very fine, slightly silty and clayey, loose to friable, mica (trace, silt-very fine), dark minerals (3 to 5%, silt-very fine), no fossils noted, no acid fizz, massive, pinkish-gray (5YR8/1).
- 111'0"-112'0" No recovery.
- 112'0"-120'2" SAND, very fine to fine, well-sorted, loose, mica (trace, very fine-fine), dark minerals (3%, very fine-fine), no fossils noted, no acid fizz, common exotic clay clasts (medium-light-gray N6, up to 0.5 inches), massive, pinkish-gray (5YR8/1). Basal contact is sharp and irregular with 1-inch relief.
- 120'2"-137'0" SAND, very fine to fine, locally silty and slightly clayey, moderately well-sorted, friable, mica (1% very fine-medium), no fossils noted, no acid fizz, abundant burrows of two types - 1) cylindrical to irregular, unlined, sand-filled (very fine-fine, better sorted than matrix) burrows (0.25- to 3-inch diameters), 2) cylindrical?, clay-lined, sand-filled (very fine-fine) burrows with spreiten (0.5 inch diameter), very pale-orange (10YR8/2), pale-yellowish-brown (10YR6/2) in burrows.
- 137'0"-137'6" No recovery.
- 137'6"-143'4" SAND, very fine to fine, silty and slightly clayey, friable to semi-indurated, mica (1%, very fine-fine), sparse disseminated plant fragments (sand-sized to 0.25 inches; common at 139'-143'4"), no acid fizz, sparse, burrows (sand-filled, unlined, 0.25-inch diameter, horizontal) and common-to-abundant, mostly disrupted, larger clay-lined burrows, greenish-gray (5GY6/1) to light-olive-gray (5Y6/1), clay-linings of burrows are light-gray (N7). Basal contact is sharp with an obvious change in color but minor change in gross lithology.
- 143'4"-148'7" SILT, to very fine SAND, slightly clayey - clay content increases significantly downward, friable to loose, mica (trace, silt-very fine), no fossils noted, no acid fizz, sparse sand-filled cylindrical, unlined burrows (0.25-inch diameter), yellowish-gray (5Y7/2) to grayish-yellow (5Y8/4) stained with dusky yellow (5Y6/4). Basal contact is sharp and irregular.
- 148'7"-152'3" CLAY, silty, dense, hard, sparse to locally common disseminated plant fragments (sand-sized), pyritized stems or roots? are present from 148'7" to about 150'0", abundant molds of small whole pelecypod valves (about 0.2 inches, no shell material remaining) in top 1.5 ft, no acid fizz, common irregular, unlined,

sand-filled burrows, clay - olive-gray (5Y4/1), sand in burrows - yellowish-gray (5Y8/1). Basal contact is at break between core segments.

152'3"-154'6" SAND, very fine to fine, silty and slightly clayey, friable to semi-indurated, mica (trace, very fine), no fossils noted, no acid fizz, common branching and nonbranching burrows (unlined and clay-lined, irregular, sand-filled cylindrical, 0.2- to 0.5-inch diameters), silt intraclasts (yellowish-gray, 5Y8/1) in basal 3 inches, medium-light-gray (N6) to light-olive-gray (5Y6/1). Basal contact is sharp and slightly irregular.

154'6"-160'0" SILT, slightly clayey, friable, percentage of clay increases downward, mica (trace, silt-very fine), no fossils noted, no acid fizz, common irregular burrows (unlined, sand-filled, up to 0.5-inches diameter), grayish-yellow (5Y8/4) mottled with light-brownish-gray (5YR6/1) at top grades down to light-olive-gray (5Y6/1) at base.

160'0"-161'10" No recovery.

161'10"-163'0" SAND, very fine to fine, silty and slightly clayey, no fossils noted, no acid fizz, common clay intraclasts (sand-sized to 0.75 inch) in basal 4 inches, light-olive-gray (5Y6/1), clay clasts - yellowish-gray (5Y8/1). Basal contact is sharp, highly irregular, and burrowed.

163'0"-171'10" CLAY, silty, hard, dense, becomes siltier and sandier (very fine) below 169'0", mica (trace, silt), common plant fragments (sand-sized to 0.5 inch), no acid fizz, abundant branching burrows (clay-lined, sand-filled, 0.5- to 1.0-inch diameter, decrease in size and abundance downward), common slickensided fractures forming blocky fabric, yellowish-gray (5Y8/1) at top grades down to light-olive-gray below 166'0". Basal contact is gradational across several inches.

171'10"-175'3" SAND, very fine to fine, silty and slightly clayey, hard, dense, friable to semi-indurated, common plant fragments in bottom foot, scattered macrofossil fragments (chalky, porous, sand-sized to 0.5 inch) at 172'6" to 174'4" and in basal 3 inches, acid fizz from mollusk fragments only, common clay clasts (sand-sized to 0.5 inch) in basal foot, very pale-orange (10YR8/2), pale-yellowish-brown (10YR6/2) in basal foot, clay clasts - yellowish-gray (5Y8/1) to medium-light-gray (N6), plant fragments - brownish-gray (5Y4/1).

175 ft 3 inches - BOTTOM OF HOLE

MISSISSIPPI BUREAU OF GEOLOGY

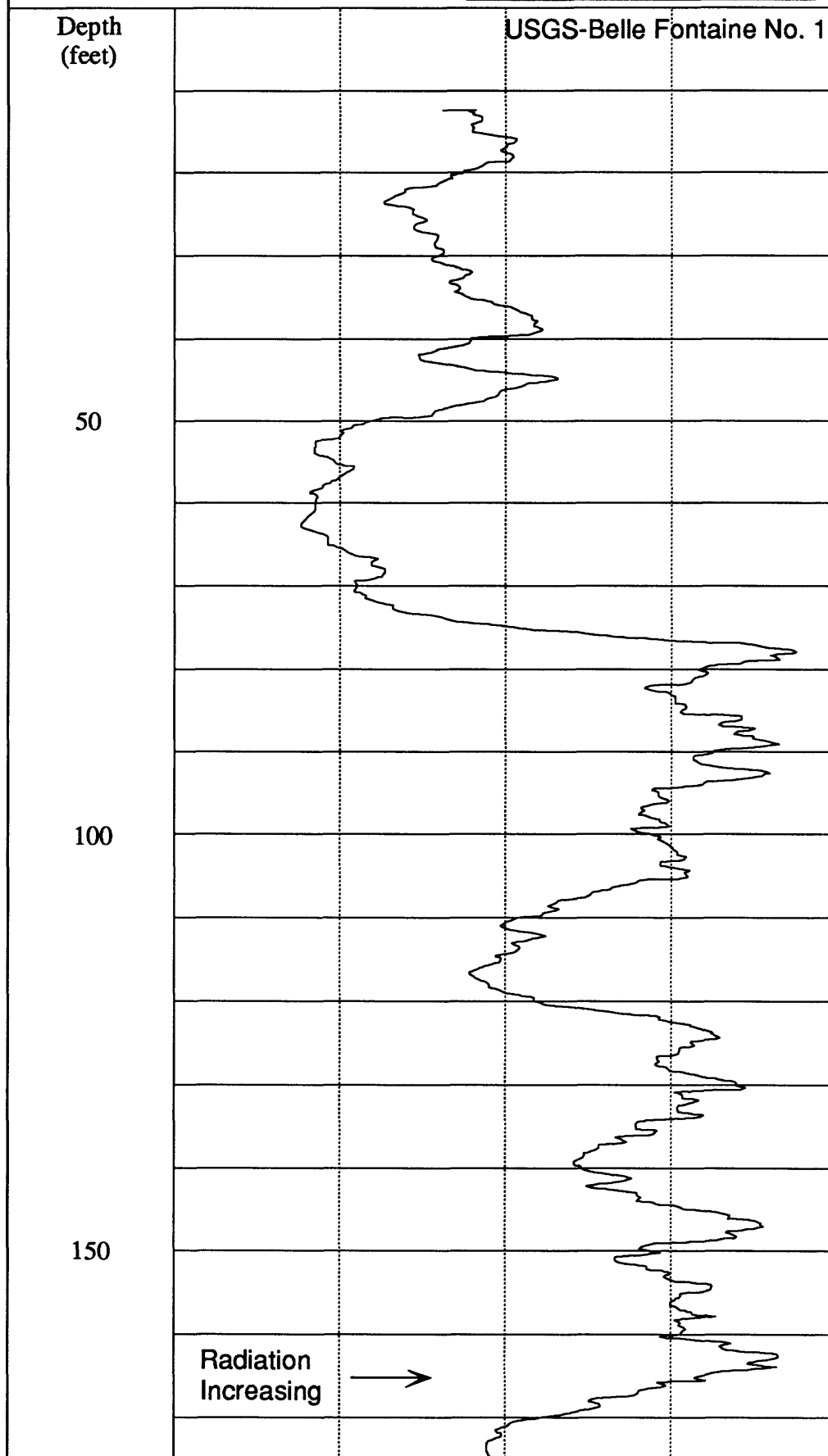
Date: 5/15/90
Jackson County
Datum: ground

File Number: N-81B

Section 13, Township 8S, Range 8W

Elevation 6 ft

Natural Gamma Ray Log



USGS-OCEAN SPRINGS POLICE FIRING RANGE NO. 1 COREHOLE
Jackson County, Mississippi

Section 35, Township 7S, Range 8W
NE1/4, NW1/4, SW1/4, Section 35
Ocean Springs 7.5-minute Quadrangle

Surface elevation: 10 feet
Total depth: 170 feet
Available logs: gamma-ray, electric

Footage:

- 0-8'0" No recovery. Well-sorted, silty, fine-to-medium SAND in mud pit.
- 8'0"-10'0" SAND, very fine, well-sorted, high porosity, loose to friable, no fossils noted, no acid fizz, massive, white. Basal contact is gradational.
- 10'0"-13'9" SAND, very fine to medium, well-sorted, loose to friable, no fossils noted, no acid fizz, massive, dark-yellowish-orange (10YR6/6).
- 13'9"-16'0" No recovery.
- 16'0"-17'4" SILT TO VERY FINE SAND, moderately well-sorted, mica (trace to 1%, silt-sized), disseminated plant material (trace to 3%, sand-sized), no calcareous fossils noted, no acid fizz, several discontinuous, contorted clay laminae (about 0.1 inch thick, may represent burrow linings), possible sand-filled root casts, one irregular "pod" of dark yellowish orange, very fine to medium sand similar to above 13'9", very pale orange (10YR8/2) mottled with grayish orange (10YR7/4) and dark yellowish orange (10YR6/6). Basal contact is a color boundary.
- 17'4"-20'8" Lithology similar to above but less oxidized:
SILT TO VERY FINE SAND, well-sorted, mica (trace to 1%, silt-sized), plant material (trace to locally 10%, sand-sized) disseminated and locally forming very thin laminae in top 4 inches, no calcareous fossils noted, no acid fizz, discontinuous laminae and irregular areas of silty clay are probable burrow linings, sand - yellowish-gray (5Y8/1), clay - light-olive-gray (5Y6/1).
- 20'8"-25'0" No recovery.
- 25'0"-27'1" SILT TO VERY FINE SAND with irregular clay lamina (burrows?) as in 17 ft-4 inches to 20 ft-8inches. "Poker-chip" parting in basal foot. Basal contact is sharp with 0.5 inches of relief.
- 27'1"-47'6" CLAY, silty, becomes sandier (very fine, 10 to 30%) below 42-ft depth, dense, subconchoidal fracture on parting surfaces where struck by hammer, mica (trace to 1%, silt to very fine), disseminated plant material (1%, sand-sized), no calcareous fossils seen, no acid fizz; sparse, scattered dark-brown oval stains on parting

surfaces (about 0.1 inches in diameter); below 39 ft - scattered unlined burrows containing clayey fine-to-coarse sand (sharp boundaries, about 0.5 inches thick), variably greenish-gray (5GY6/1), greenish-gray (5G6/1), or medium-gray (N4). Basal contact not seen (sample removed prior to description).

- 47'6"-53'6" SAND, very fine to medium at top coarsens downward to very fine to coarse, well-sorted, loose to friable, no fossils noted, no acid fizz, irregular to oval dark stained patches (0.25 to 0.5 inches in diameter) may be humate, grayish-orange-pink (5YR7/2).
- 53'6"-60'0" No recovery.
- 60'0"-61'0" SAND, medium to coarse, 10% very coarse, well-sorted, loose to friable, no fossils noted, no acid fizz, sparse scattered silt intraclasts (sand- to granule-sized), massive, grayish-orange-pink (5YR7/2). Basal contact is sharp at break between core segments.
- 61'0"-68'0" SILT to VERY FINE SAND, slightly clayey, moderately well-sorted, loose to friable, mica (trace, silt to very fine), no fossils noted, no acid fizz, massive, very pale orange (10YR8/1).
- 68'0"-70'0" No recovery.
- 70'0"-72'10" SILT to VERY FINE SAND, same lithology as in 61 ft-0 inches to 68 ft-0 inches. Basal contact is sharp between core segments.
- 72'10"-74'11" CLAY, silty, swirled fabric probably produced during drilling, no fossils noted, no acid fizz, common silt-to-sand (very fine)-filled, branching burrows (or possibly root casts) (0.1 inch diameter), pale-olive (10Y6/2) mottled with light-brown (5YR5/6) and grayish-orange (10YR7/4). Basal contact is sharp at break between core segments.
- 74'11"-79'0" SILT to VERY FINE SAND, locally 10% medium sand, well-sorted, loose to friable, no fossils noted, no acid fizz, locally with possible clay-lined burrows, very pale orange (10YR8/1).
- 79'0"-80'0" No recovery.
- 80'0"-82'0" SILT to VERY FINE SAND, clayey (5 to 10%, disseminated), friable, interbedded on a 0.5- to 2-inch scale with CLAY, silty; no fossils noted and no acid fizz in interval, silt-clay contacts are sharp and irregular, both lithologies cut by sand-filled burrows (very fine-fine sand, 0.5- 0.75-inch diameter), yellowish-gray (5Y7/2). Base of interval chosen as base of lowest clay bed.

- 82'0"-90'0" SILT to VERY FINE SAND, clayey (disseminated, 5 to 10%), friable, mica (trace, silt-very fine), no fossils noted, no acid fizz, indistinct textural mottling, sparse scattered clay-lined burrows (0.5-inch and smaller diameters), yellowish-gray (5Y7/2). Broadly gradational into underlying lithology.
- 90'0"-108'9" SAND, very fine, silty, friable, mica (1%, silt-very fine), no acid fizz, detrital plant material (1 to 3%, sand-sized) occurs as disseminated grains and locally in thin (0.1 inch) wavy discontinuous laminae at least some of which are burrow linings, cylindrical clay-lined burrows (0.5-in and smaller diameters), yellowish-gray (5Y8/1) mottled with light-brownish-gray (5YR6/1).
- 108'9"-110'0" No recovery.
- 110'0"-113'3" SAND, very fine, silty, moderately well-sorted, friable, mica (trace, silt-very fine), no fossils noted, no acid fizz, sparse cylindrical clay-line burrows, indistinct texture mottling and irregular concentrations of detrital plant material (sand-sized) suggests bioturbation, yellowish-gray (5Y8/1).
- 113'3"-115'0" No recovery.
- 115'0"-115'4" SAND, very fine to fine, well-sorted, loose, no fossils noted, no acid fizz, massive, pinkish-gray (5YR8/1) to yellowish-gray (5Y8/1). Basal contact is gradational.
- 115'4"-117'0" SAND, very fine to fine, well-sorted, loose, abundant sand-sized detrital plant material - disseminated, in thin irregular laminations, and in vertical stringers that suggest burrowing, no acid fizz, yellowish-gray (5Y8/1 - sand), and brownish-black (5YR2/1 - plant material). Basal contact is gradational.
- 117'0"-121'10" SAND, very fine to fine, well-sorted, loose, no fossils noted, no acid fizz, massive, pinkish-gray (5YR8/1) to yellowish-gray (5Y8/1).
- 121'10"-125'0" No recovery.
- 125'0"-131'4" SAND, fine, well-sorted, loose to friable, no fossils noted, no acid fizz, massive, pinkish-gray (5YR8/1) to yellowish-gray (5Y8/1).
- 131'4"-135'0" No recovery.
- 135'0"-138'10" SAND, fine, well-sorted, loose to friable, no fossils noted, no acid fizz, massive, pinkish-gray (5YR8/1) to yellowish-gray (5Y8/1).
- 138'10"-145'0" No recovery.

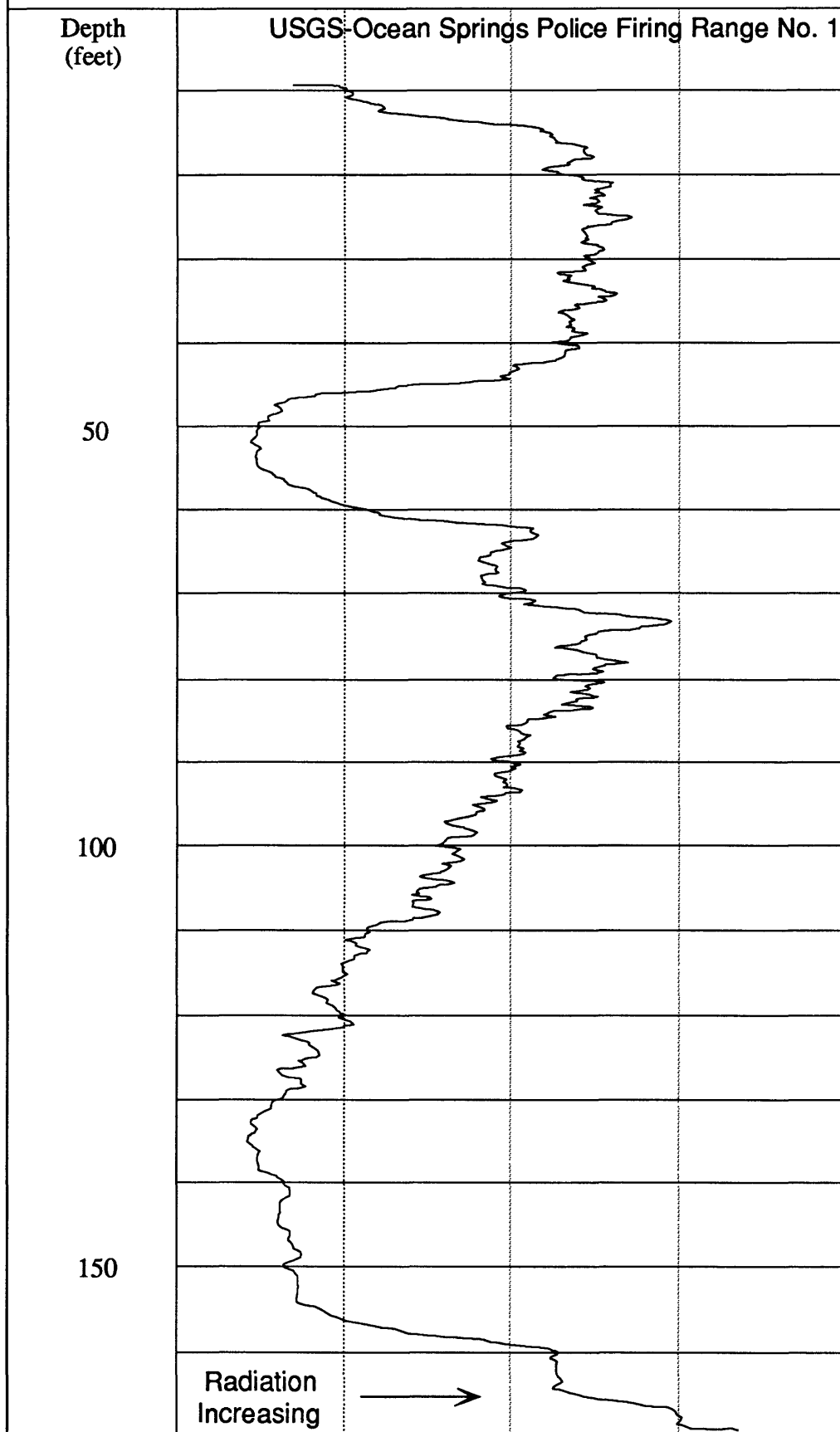
- 145'0"-152'0" SAND, locally very fine, fine, or very fine to fine, very well-sorted, loose-sugary, no fossils noted, no acid fizz, massive, yellowish-gray (5Y8/1) to pinkish-gray (5YR8/1).
- 152'0"-155'0" No recovery.
- 155'0"-158'2" SAND, locally very fine or fine, very well-sorted, loose-sugary, no fossils noted, no acid fizz, common scattered clay intraclasts in basal few inches (sand-sized to 0.5 inches), massive, yellowish-gray (5Y8/1) to pinkish-gray (5YR8/1). Basal contact is sharp and undulating; strong color and texture contrasts across contact..
- 158'2"-160'0" CLAY, silty, mica (trace, silt), no fossils noted, no acid fizz, numerous slickensided surfaces, high chroma - top half mottled dark-yellowish-orange (10YR6/6) and moderate yellow (5Y7/6), bottom half very-pale-orange (10YR8/2) mottled with dark-yellowish-orange (10YR6/6). Basal contact is gradational (clay decreasing and silt-sand increasing downward) across 6 inches.
- 160'0"-163'0" SAND, very fine, silty and clayey, friable to compact, no fossils noted, no acid fizz, noted one spiral sand-filled (very fine to medium) tube with oxidation halo (root cast?), yellowish-gray (5Y7/2).
- 163'0"-165'0" No recovery.
- 165'0"-166'2" SAND, very fine, silty and clayey, friable, no fossils noted, no acid fizz, massive, yellowish-gray (5Y7/2) to pale olive (10Y6/2).
- 166'2"-170'0" No recovery.
- 170 feet --- BOTTOM OF HOLE.

MISSISSIPPI BUREAU OF GEOLOGY

Date: 5/18/90
Jackson County
Datum: ground

File Number: N-82B
Section 35, Township 7S, Range 8W
Elevation: 10 ft

Natural Gamma Ray Log



USGS-SHEPARD STATE PARK NO. 1 COREHOLE

Jackson County, Mississippi

Section 3, Township 8S, Range 6W
SE1/4, NE1/4, NE1/4, Section 3
Pascagoula North 7.5-minute Quadrangle,

Surface elevation: 5 feet
Total depth: 170 feet
Available logs: gamma-ray, electric

Footage:

0'0"-9'7"	No recovery.
9'7"-10'0"	Clay, silty and sandy (very fine), dense, mica (1-3%, silt-very fine), no fossils noted, no acid fizz, very light-gray (N8) mottled with moderate red (5R5/4) and dark-yellowish-orange (10YR6/6).
10'0"-13'6"	No recovery.
13'6"-15'0"	Clay, sandy (very fine) and silty, dense, mica (1-3%, silt-very fine), no fossils noted, no acid fizz, common root structures, very light-gray (N8) mottled with moderate red (5R5/4) and dark-yellowish-orange (10YR6/6).
15'0"-17'6"	No recovery.
17'6"-18'6"	Sand, very fine to fine, very clayey, mica (1-3%, very fine-fine), very light-gray (N8) mottled with moderate red (5R5/4) and dark-yellowish-orange (10YR6/6). Basal contact is broadly gradational.
18'6"-23'9"	SAND, fine to coarse, locally with 5% very coarse, loose to friable, no fossils noted, no acid fizz, possible clay intraclasts in basal foot, yellowish-gray (5YR8/1) mottled with dark-yellowish-orange (10YR6/6) and very pale orange (10YR8/2). Basal contact is sharp and irregular with 1-inch relief.
23'9"-24'2"	SAND, fine to medium, moderately well-sorted, loose to friable, no fossils noted, no acid fizz, yellowish-gray (5YR8/1) mottled with dark-yellowish-orange (10YR6/6) and grayish-orange (10YR7/4), complexly interbedded with CLAY, silty and sandy (fine to medium), no fossils noted, no acid fizz, light-brownish-gray (5YR6/1). Basal contact is sharp and wavy.
24'2"-25'0"	SAND, fine to medium, locally 3-5% coarse sand to granules, no fossils noted, no acid fizz, locally humate-rich (humate in horizontal bands in bottom half), moderate yellowish-brown (10YR5/4) and brownish-gray (5YR4/1) with moderate brown (5YR3/4) where humate rich.
25'0"-30'0"	No recovery.

- 30'0"-31'11" CLAY, silty, no fossils noted, no acid fizz, common sand-filled, (fine-medium), unlined, vertical and horizontal burrows with oxidized margins, clay - grayish-green (10GY5/2), sand - brownish-gray (5YR4/1). Basal contact is sharp and irregular, may have been disturbed by coring.
- 31'11"-35'1" SAND, very fine to fine, locally fine to medium, well-sorted, loose to friable, no fossils noted, no acid fizz, massive, very pale-orange (10YR8/2) to pinkish-gray (5YR8/1). Basal contact marked by a line of tabular clay clasts (very pale orange, 10YR8/2) up to 1 inch in length.
- 35'1"-38'1" SAND, very fine to fine, to SILT, friable to compact, no fossils noted, no acid fizz, massive, very pale orange (10YR8/2) to very light gray (N8).
- 38'1"-40'0" No recovery.
- 40'0"-40'3" SAND, very fine to fine, to SILT, as in 35ft-1 inch to 38 ft-1 inch.
- 40'3"-45'0" CLAY, silty, dense, no fossils noted, no acid fizz, yellowish-gray (5Y8/1) mottled with dark-yellowish-orange (10YR6/6). Basal contact if broadly gradational from 43 ft to 46 ft.
- 45'0"-48'5" SAND, very fine, silty and clayey, friable, mica (1%, silt-very fine), sparse disseminated plant fragments (trace, sand-sized), no acid fizz, yellowish-gray (5Y8/1).
- 48'5"-50'0" No recovery.
- 50'0"-57'0" SAND, very fine, to SILT, friable, sparse disseminated plant fragments (trace, sand-sized), no acid fizz, small irregular clay blebs are probably remains of clay-lined burrows, strong texture mottling suggests bioturbation, yellowish-gray (5Y8/1). Basal contact is broadly gradational from 56 ft to 58 ft.
- 57'0"-63'3" SAND, very fine to medium, slightly silty and clayey, loose to locally friable, sparse disseminated plant material (sand-sized to 1.0 inch) particularly at base, no acid fizz, two 1-inch-thick clay beds at about 58 ft-6 inches, locally - suggestion of inclined stratification, very light-gray (N8) to light-pinkish-gray (5Y8/1).
- 63'3"-75'0" No recovery.
- 75'0"-78'8" SAND, fine to coarse, locally with 5% coarse, well-sorted, loose, very sparse plant fragments (sand-sized), no acid fizz, locally-weak suggestion of horizontal bedding, light-pinkish-gray (5YR8/1).
- 78'8"-80'0" No recovery.

- 80'0"-84'8" SAND, fine to medium, well-sorted, loose, to locally friable, no fossils noted, no acid fizz, massive, light-pinkish-gray (5YR8/1).
- 84'8"-90'0" No recovery.
- 90'0"-91'3" SAND, fine to medium, loose to friable, no fossils noted, no acid fizz, pale orange (10YR8/2) stained with dark-yellowish-orange (10YR6/6) complexly interlayered with CLAY, sandy (fine-medium) and silty, no fossils noted, no acid fizz, light-gray (N7).
- 91'3"-100'0" No recovery.
- 100'0"-104'7" SAND, locally fine-medium to fine-very coarse with 10% fine gravel, loose, no fossils noted no acid fizz, coarse fraction includes quartz, clay chips, and phosphate, massive, very light-gray (N8) to light-greenish-gray (5GY8/1).
- 104'7"-105'0" No recovery.
- 105'0"-106'5" SAND;, very fine to very coarse, loose, no fossils noted, no acid fizz, massive, grayish-orange-pink (5YR7/2), Basal contact is sharp and inclined at a low angle, 0.25-inch relief.
- 106'5"-108'0" SAND, very fine to fine, silty, loose to friable, sparse roots (0.25-inch diameter), concentration of wood fragments at 107 ft-10 inches, no acid fizz, pale olive (10Y6/2). Basal contact is sharp.
- 108'0"-109'0" CLAY, silty, no fossils noted, no acid fizz, locally with very thin horizontal silty laminae, common sand-filled (very fine to fine), unlined, cylindrical to irregular burrows, grayish-green (10GY5/2).
- 109'0"-110'0" No recovery.
- 110'0"-112'6" CLAY, silty burrowed, as in 108 ft-109 ft. Basal contact at end of row in core box, not seen.
- 112'6"-121'0" SAND, very fine to fine, silty, friable, disseminated plant fragments (trace-1%, sand-sized), no acid fizz, color mottling and faint textural mottling suggests bioturbation, common disseminated clay clasts (gray-green, up to 0.5 inch), color varies from light gray (N7) to light-olive-gray (5Y7/1) to pale-yellowish-brown (10YR6/2). Basal contact is sharp and irregular.
- 121'0"-124'9" CLAY, silty, scattered plant fragments (trace-1%, sand-sized to 0.5 inch), no acid fizz, common sand-filled unlined burrows (0.1- to 0.5-inch diameter, very fine to fine sand, friable, no acid fizz), light-olive-gray (5Y6/1) to grayish-yellow-green

(5GY7/2) mottled with moderate-yellowish-brown (10YR5/4) to dark-yellowish-brown (10YR4/2).

124'9"-125'0" No recovery.

125'0"-138'0" CLAY, silty, disseminated plant fragments (trace-1%, sand-sized to 0.5 inch), no acid fizz, sparse sand-filled unlined burrows (0.1- to 0.5-inch diameter, very fine to fine sand, friable, no acid fizz) in upper 5 feet, light-olive-gray (5Y6/1) to grayish-yellow-green (5GY7/2) mottled with moderate-yellowish-brown (10YR5/4) to dark-yellowish-brown (10YR4/2). Contact with underlying unit is broadly gradational from 136 ft to 138 ft.

138'0"-139'9" CLAY, silty, as above, interbedded on a 0.1- to 2-inch scale (lenticular and discontinuous planar laminae) with SAND, very fine to fine, silty and slightly clayey friable to loose, clay - greenish-gray (5GY6/1), sand - yellowish-gray (5Y8/1). Basal contact is gradational.

139'9"-140'0" SAND, fine to medium, well-sorted, loose to friable, no fossils noted, no acid fizz, massive, yellowish-gray (5Y8/1). Basal contact is gradational.

140'0"-141'8" Irregular 1- to 3-inch blocks of CLAY, silty, no fossils noted, no acid fizz, engulfed in SAND, fine to medium, as above and below. Basal contact is gradational.

141'8"-149'0" SAND, very fine to medium, well-sorted, loose, concentration of plant material in 0.5-inch-thick layer at 148 ft, no acid fizz, a few thin (less than 0.1 inch), continuous to discontinuous clay laminae and simple to bifurcated clay flasers at 144 ft to 145 ft, pinkish-gray (5YR8/1).

149'0"-150'0" No recovery.

150'0"-159'0" SAND, very fine to medium, well-sorted, loose, plant material (1%, sand-sized), no acid fizz, concentration of peaty plant material with individual pieces up to 0.5 inch at 157 ft-1 inch to 157 ft-7 inches and in thin layer at 157 ft-11 inches, pinkish-gray (5YR8/1).

159'0"-160'0" No recovery.

160'0"-165'1" SAND, fine to medium, fine to coarse in basal 2 feet, well-sorted, loose, high porosity, no fossils noted, no acid fizz, common exotic clay clasts (light gray-N8, smeared boundaries, typically 0.5 inch, maximum 1.0 inch) in basal two feet, pinkish-gray (5YR8/1). Basal contact is a sharp texture and color boundary with 0.5 inches of relief.

165'1"-166'6" Irregular blocks of CLAY, silty, blocky fabric, no fossils noted, no acid fizz, very pale orange (10YR8/2), cut by or engulfed in SAND, very fine, to SILT in irregular masses and distinct tubes (0.5-inch diameter). Slight color contrast at basal contact.

166'6"-169'7" SAND, very fine, to SILT at top grades down to silty very fine to fine SAND at base, slightly clayey (less than 5%), friable, no fossils noted, no acid fizz, massive except for two possible sand-filled root casts in top 6 inches and very sparse, scattered rootlets, variably grayish-orange (10YR7/4), dark-yellowish-orange (10YR6/6), and moderate yellow (5Y7/6).

169'7"-170'0" No recovery.

170 feet --- BOTTOM OF HOLE

MISSISSIPPI BUREAU OF GEOLOGY

Date: 05/09/90

File Number: P-67

Jackson County

Section 3, Township 8S, Range 6W

Datum: ground

Elevation: 5 ft

Natural Gamma Ray Log

