

FLA-ESC-OT-1

- 810-40 | wh, vc qtz, WS, WR qtz sd w/ v Abund lg. forams a.s.f.
- 840-70 | N.S.
- 870-00 | do
- 900-30 | do VC sd - f qtz pebbles
- 930-60 | N.S.
- 960-90 | do
- 990-2145 | N.S.
- 2145-60 | Crmy, micro, ind, porous foram ls
- 2175-90 | do w/some sparry calcite replacement
- 2215-45 | off wh-crmy, micro, soft, porous, v chy foram ls
- 2245-75 | do
- 2290-15 | do
- 2315-30 | Crmy, micro, porous, soft, v chy ls w/ scatt forams
- 2345-60 | do v. small pyr inclusions in ls
- 2390-05 | do no inclusions of pyr but just tr. & ls ind.
- 2360-90 | As (2345-60)
- 2430-40 | Crmy, micro, porous, ind, v chy ls w/ Abund forams, enh-Auh pyr & 10% gn. glauc
- 2460-20 | do
- 2520-80 | do
- 2710-40 | lt qtz, v f qtz, ind, porous, calc ss
- 2740-70 | off wh, micro, soft, porous, chy forams w/ Abund gn-brn glauc & pyr

2920-80 | ls as above w/ abund pyr & ga - brn glauc

2980-10 | do

3010-40 | do

3040-70 | N.S.

3070-00 | do plus clear Mn, w, SR & t & sd

3140-00 | ls as above w/ tr. pyr & abund ga glauc

3230-60 | do

3290-20 | do

3320-80 | do plus lt grey, tfg, ind, perons, highly calc, glauc ss

3380-10 | do

3410-40 | ls plus clear Mn, w, wR & t & sd Tr. sh glauc pyr

3470-00 | do

3500-30 | do

3530-60 | do no pyr

3680-10 | ls as above Tr. pyr, ga glauc

3710-40 | do no pyr

3710-00 | AS (3680-10)

3800-30 | do w/ brn & red, hard, dense, tfg, m. dol

3830-60 | do

3890-70 | do

3950-80 | do

3980-10 | do

4220-50	ltgy, soft, porous, Arg, foss ch	Tr, pyr, gn glauc
4250-80	do	
4340-70	do	
4380-10	do	
4430-60	do	plus brack red, hard, tyll, denser chd, muno
4460-90	do	
4490-20	do	
4520-50	do	
4550-80	do	
4590-10	dol AS above w/ cmg, mung, soft, porous, ch, foss ls	Tr, pyr, gn glauc
4620-40	do	
4650-80	do	
4680-10	do	
4720-40	wt, porous, soft, foss ch	Tr, pyr
4740-70	do	
4780-00	do	plus Tr, gn glauc
4800-30	do	
4840-50	do	
4860-70	do	
4900-30	do	
4940-60	do	
4980-80	do	

5860-90	do	
5900-20	do	
5920-50	do	
5950-70	do	w/ brack red, micro, hard, tight dol
5980-00	do	
6000-30	do	no pyr
6030-60	do	no glauc
6060-90	do	Tr. pyr, glauc
6090-20	do	
6120-50	do	
6150-80	Arg ch w/ lt qtz, fgy, ind, porous calc ss	Tr. glauc
6180-10	do	
6210-40	do	
6240-70	do	Tr. pyr
6270-00	do	
6300-30	do	plus 40% ls, s, f,
6330-50	do	
6360-90	lt qtz, soti, porous, Arg, foss ch w/ clean fgy, w/ 50% s & sd + 30% ls, s, f,	Tr. glauc
6390-20	do	Tr. pyr
6420-50	do	
6450-80	Arg ch w/ lt qtz, uf qtz, ind, calc, mic, <sup>ARS</sup> s & ss	/
6480-10	do	

6600-30	do	Tr. pyr
6630-60	do	
6660-90	do	
6690-20	do	
6720-50	do	
6750-80	do	
6780-10	do	Tr. glauc w/ lt. gr. fossils, ind. calc sh
6810-40	do	no glauc or pyr
6840-70	do	Tr. pyr
6870-00	do	
6900-30	do	
6930-60	do	
6960-90	do	
6990-20	do	
7020-50	do	
7050-80	do	but sh is dk. gr., fossils, ind. & thin calc, wh lenses
7080-10	dk. gr., fossils, ind sh w/ thin calc, wh lenses	w/ lt. gr., v. gr. <sup>f</sup> Arg, m. calc ss
7110-40	do	Tr. pyr, glauc
7140-70	do	
7170-00	do	
7200-30	do	no glauc
7230-60	do	

7320-50 | do  
7350-80 | do  
7380-10 | do  
7410-40 | dk gr, fossil, ind, calc sh w/ & w/o wh calc lenses  
7440-90 | do  
7470-00 | do  
7500-10 | do  
7520-50 | do  
7550-80 | do  
7580-10 | do plus lt dk gr, vt-fgr, ind, porous, glauc, mic Arg ss  
7610-40 | do  
7640-70 | sh w/ wh cgr, ws, ss & z sd  
7670-00 | do  
7700-30 | As (7580-10)  
7730-60 | do  
7760-90 | do  
7790-20 | do  
7820-50 | do  
7850-80 | do  
7880-10 | do  
7910-40 | do  
7940-70 | lt-dk gr, fossil, ind, calc sh w/ lt tan, fgr, ind, porous, mic, glauc calc ss

8060-90 | do  
8090-20 | do  
8120-50 | do Tr. pyr  
8150-80 | do  
8180-10 | do  
8210-20 | do  
8230-60 | do Tr. yel sd  
8260-90 | do no yel sd  
8290-20 | brick red, fqny ind, mic, calc ss w/ lt dk gny, fissile, ind, calc sh w/ 2% wh calc lenses  
8320-50 | do ss is red-yel-lt gny  
8350-60 | do  
8370-00 | do w/ brick red, fissile, soft sh  
8400-30 | do no yel ss  
8430-60 | lt gny, fqny ind, porous, mic, calc, glauc ss w/ lt dk gny - brick red - yel, fissile, ind-soft sh  
8460-90 | do Tr. pyr  
8490-20 | lt tan, v fqny, ind, porous, calc ss w/ brick red, blocky, ind sh  
8520-50 | do  
8550-80 | lt gny, fqny, ind, porous, calc, mic ss w/ brick red & yel mottled, blocky soft sh  
8580-10 | do  
8610-40 | do  
8640-50 | w/ fqny, ind, calc, slightly mic, slightly glauc ss  
8660-90 | do + brick red, fissile - blocky, soft sh

8780-30 | As(8730-60)

8830-50 | lt gray, micro, ind, porous, foss, v finely sdy ls w/ gray sh

8860-90 | lt gray, micro, ind, fairly tight, dense ls w/ scatt, foss frags w/ gray sh - lt gray, fissile, ind

8900-30 | do

8930-60 | do

8960-80 | do

9000-30 | do

9030-40 | do

9070-00 | do

9100-30 | do

9130-60 | do

9160-40 | do

9210-50 | do

9250-80 | do

9280-10 | do

9310-40 | do

9340-70 | do

9380-10 | do

9410-40 | do

9440-70 | lt gray - buff, micro, hard, tight, dense ls w/ scatt foss frags &ool w/ Many, fissile, ind, light gray sh

9470-80 | do

↑ (This is "red" rubble ls of Fred.)

9490-00 | do



9610-40 | do

9640-70 | do

9670-00 | do + wh, micro, ind, pure anh

9700-30 | lt gray-brn gray - buff, micro-crypto, hard, tight, dense ls w/ SCARROLL & cross frags + M-dk gray, fossiliferous, ind, highly mic sh

9730-60 | do

9760-90 | do

9790-20 | do

9820-40 | do

9850-80 | do + wh-pink, fgn, mic, ind, porous, arg, calc ss

9880-10 | ls & sh as above

9910-40 | do

9940-70 | do + anh

9970-00 | wh, fgn, ind, porous, calc, mic ss

10,000-30 | M gray-brn gray, micro, hard, tight, dense ls w/ lt-dk gray, fossiliferous, ind, highly mic sh

10,030-60 | do

10,060-90 | Pink, fgn, ss, SR & z sd w/ brickred, fossiliferous, ind sh

10,090-20 | do

10,120-50 | wh, fgn, ind, porous, calc ss w/ red sh

10,150-80 | do

10,190-20 | do

10,220-50 | wh-pink ss do

10,340-70 | wh, fgn, ind, porous, Arkosic ss w/ red sh - brick red, ind, fissile, slty

10,370-00 | Red, fgn, ind, porous ss w/ red sh

10,400-30 | do

10,430-60 | As (10,340-70)

10,460-90 | do

10,490-20 | brick-red, fgn, ind, fairly tight ss w/ red sh

10,520-40 | do

10,550-80 | do

10,580-10 | wh, fgn, ind, mic, fairly tight ss & red sh

10,610-40 | do

10,670-00 | do

10,700-30 | do

10,730-60 | do

10,760-90 | do but sd is pink

10,790-10 | do

10,810-40 | do

10,840-70 | do

10,870-00 | do

10,900-30 | do

10,930-60 | do

10,960-90 | wh, fgn, ind, fairly tight, mic ss w/ brick red, fissile-blocky, slty, hard sh

10,990-20 | do

<u>11,110-40</u>	do	
<u>11,140-70</u>	do	
<u>11,170-00</u>	do	
<u>11,200-30</u>	do	v few ool
<u>11,230-60</u>	do	
<u>11,260-90</u>	do	
<u>11,290-20</u>	do	
<u>11,320-50</u>	Mqgy, micr, hard, tight, dense ls w/ reacr. foss frags & w/ Mqgy, finely ind sh	
<u>11,350-80</u>	do	
<u>11,380-10</u>	do	
<u>11,410-40</u>	do	plus wh, micr, hard sub. Some ls areas highly ool
<u>11,440-70</u>	do	
<u>11,470-00</u>	do	
<u>11,500-30</u>	do	Log as sub on high kicks w/ sh intb.
<u>11,530-60</u>	do	
<u>11,560-90</u>	do	
<u>11,590-20</u>	do	Sample shows Mqgy, micr, hard, tight, dense ls & Mqgy, finely ind sh
<u>11,620-50</u>	do	
<u>11,650-80</u>	do	
<u>11,680-10</u>	do	
<u>11,710-40</u>	do	
<u>11,740-70</u>	Mqgy, micr, hard, tight, dense ls w/ Mqgy, ind fossil sh & wh, v frag, hard, dense sub	

<u>11,860-90</u>	do
<u>11,890-20</u>	do ls is all ool
<u>11,920-50</u>	do but just w/ ool areas
<u>11,950-80</u>	do
<u>11,980-10</u>	do no anh & v few ool
<u>12,010-40</u>	do
<u>12,040-70</u>	do
<u>12,070-00</u>	do
<u>12,100-30</u>	do
<u>12,130-60</u>	do w/ pale gn, fgn, ind, parans, mic, slightly calc ss
<u>12,160-90</u>	lt-Mgn, mic, hard, tight, dense ls w/ scarp ool & Mgn, fusile, ind sh & anh, mic, ind anh
<u>12,190-20</u>	do
<u>12,220-50</u>	do
<u>12,250-80</u>	do some ls areas abund. ool
<u>12,280-10</u>	do
<u>12,310-40</u>	do
<u>12,340-70</u>	do
<u>12,370-00</u>	do
<u>12,400-30</u>	do
<u>12,430-60</u>	do
<u>12,460-90</u>	do
<u>12,490-12</u>	do plus w/ fgn, mic, ind, parans, slightly calc ss

Report on samples studied from the Zack Brooks & Co., No. 1 Caldwell-Garvin et al Unit, Escambia County, Florida.

Samples through courtesy of Elmer Rice, Trowbridge Sample Service, Jackson, Miss., Feb. 1957.

WX<sup>2</sup>  
KEELED MARGINALIA  
J. B. GARDNER  
NODOSARIA SP.  
AMPA - COPEL. TR. KEOHAI 2.

2010 - 40'

Cutting - Lithology, mainly fragments of hard, dark brownish gray, calcareous, and extremely fine-grained sandstone; and dark, slightly reddish brown, soft, flaky shale. Some rounded and oxidised, moderately large, glauconitic nodules also present, and fragments of several types of gray clay. A number of forams present, apparently coming from a number of levels in the hole. Oldest microfossil noted, Eocene (Middle?). For lithology and fauna, see #1-5 on slide.

7, 8, 10, 11  
B. 10 OPERCULUS  
B. 10 OPERCULUS  
748  
2145 - 60'  
Age Claiborne  
Middle Eocene.

Cutting - mainly light greenish gray, clay shale. Sample contains abundant specimens of Operculinoides cf. sabinensis, forming about 50% of sample content. A few fragments of Bryozoa. For fauna and lithology, see #6-10 on slide.

2175 - 90'  
VOP - cf. GARDNER  
OPERCULUS

Cutting composed of about 50% clay as above, and 50% fragments and specimens of Operculinoides cf. sabinensis, which apparently comes from very finely sandy to silty lenses in shale. A few fragments of Polylepidina gardnerae and Operculina sp., also a few fragments of Discocyclus sp. See #11 to 15 on slide.

2215 - 30'

Similar to the above. Specimens of Operculina sp. common. Other microfossils comparatively rare. Fragments of a white, glauconitic, impure chalk with a finely nodular texture fairly common in the sample. Glauconite in chalk distributed in fine, nodular particles.

2245 - 75'

OPERCULUS,  
CHALK OF  
SMALL FORAMS MASTERS

Sample about 50% greenish gray clay shale, and 50% white, impure chalk as above. A few fragments of Operculinoides and other forams as above. A few small forams noted in the chalk. For chalk and some forams, see #16 and 17 on slide.

2290 - 2305'

Like the preceding.

2305 - 30'

No change.

2345 - 75'

Cutting composed mainly of finely dark flecked chalk or chalky clay.

Robulus  
Tritaxillina  
Zone.

Also fragments of a white, impure and commonly  
chalk. Specimens of several species of smaller foraminifera  
common. Characterizing fossils present - Robulus cf. pilu-  
liferous, Robulus mexicanus, Tritaxillina sp. Globigerina sp.  
Also many glauconitic molds of a small planispirally coiled  
Gastropod with a depressed nuclear area. See #18 to 22 on  
slide.

2445 - 60'

Material and fauna like the above, with more caving(?) of the  
soft, dark reddish brown, clay shale. Few forams.

2460 - 75'

Cutting mainly composed of fragments of cream colored, impure  
chalk, some fragments of the dark reddish brown clay shale,  
and a few fragments of a bluish gray clay shale apparently  
new in the section. A few very small forams, Siphonia, Glo-  
bigerinas and others. See #23 and 24 on slide.

2490 - 2520'

Mainly fragments of a chalky clay. Many of these contain  
oxidized glauconitic nodules of very variable shape. A few  
very small forams - mainly several species of Globigerina.

2520 - 50'

Cream colored impure chalk, and many fragments of several  
types of light gray clay. A few very small forams like those  
above, also numerous fragments of a light gray, waxy, bento-  
nitic clay. See #25 and 26 on slide.

2550 - 80'

Similar to the above, cream colored, impure, clayey chalk or  
chalky clay, in part, glauconitic, also many fragments of  
several types of light gray clay and some fragments of the  
bentonitic clay, first seen in the preceding sample.

2710 - 40'

Like the preceding.

2740 - 70'

Wilcox

L. Escene.

E. log. auguato 2675.

Soft gray clay and impure chalk as above, also many fragments  
of a hard to moderately hard, light brownish gray, calcareous  
sandstone. Sand grains very fine to silt size. Sandstone  
contains a small amount of mica and small, scattered, dark  
brown grains (phosphatic?). For this material see #28 and 29  
on slide. Forams present, (probably caving), see #27 on slide.

2770 - 2800'

Like the preceding. Fauna of some shell fragments and a few  
forams - all possibly caving, see #30 on slide.

2800 - 30'

Like the preceding.

2830 - 60'

No change.

2860 - 90'

Cutting of argillaceous sandstone, and of fragments of several  
types of light gray, greenish gray and grayish tan clay simil  
to that seen in preceding samples. A few forams, probably  
caving, and an occasional shell fragment.

2920 - 50'

Pseudophragmina

Zone

Material like that above, also many fragments of a hard to moderately hard, dark brown to brownish gray, calcareous and somewhat glauconitic, very fine grained sandstone. Many fragments of Pseudophragmina sp. and some of Nodosaria cf. vertebralis. For material and fauna see #31 to 42 on slide.

2950 - 80'

Material mainly sandstone as above, and some fragments of gray and brownish gray clay. Fauna also same as above. Many capsule shaped, and in part, oxidized, nodules of glauconite also present in the washed concentrate.

2980 - 3010'

Cutting of sandstone as above, glauconite nodules, and several types of gray and brownish gray clay. A few forams and some shell fragments.

3010 - 40'

Fragments of gray, greenish gray and brownish gray clay, and some hard brown sandstone as above. Some glauconite nodules, and a few pyrite nodules. A few forams and shell fragments (probably caving.)

3070 - 3100'

Materials like those above - also fragments of a slightly harder, finely micaceous, gray clay, which probably represents the material being drilled. See #42 and 43 on slide.

3150 - 80'

An apparently unwashed sample of gray clay like that introduced in the preceding sample.

3170 - 3200'

Sample composed mainly of fragments of several types of gray, greenish gray and brownish gray clay. A few water-worn fragments of nacreous shelled bivalves.

3230 - 60'

Clay sample like the above. Poorly washed.

3290 - 3320'

Fragments of clay as above, also numerous fragments of a white, highly sandy and glauconitic limestone, and chalky sandstone. Sand grains fine to very fine, sharply angular. Glauconite in sandstone, very dark green and highly irregular in shape. Sandstone also contains some small phosphate nodules, and a few small fragments of carbonaceous material. Worn fragments of nacreous bivalves present. See #44-48 on slide. A few very small forams present.

3320 - 50'

Similar to the above, with the addition of many fragments of a soft, gray, highly silty, somewhat micaceous and highly carbonaceous clay. Some shell fragments, fragments of Nodosaria cf. vertebralis, and Robulus cf. alato-limbatus present. For carbonaceous clay, see #49 and 50 on slide.

3350 - 80'

Like the preceding.

3300 - 3410'

cutting of several types of silt, clay, greenish gray, in part silty, clay; fragments of light gray glauconite and calcareous sandstone as at (3290 - 3300'); fragments of a hard, dark brownish gray, calcareous sandstone, and a few shell fragments as above. About 25% of sample rounded, medium to coarse, clear quartz sand. Sample probably caving, for the most part.

3410 - 40'

Sample about 50% clay; and 50% glauconite, and sandy, chalky limestone, and hard, dark brown, dense, sandy limestone. Some quartz sand as above. A few shell fragments and forams (probably caving.)

3470 - 3500'

*Marginalina*  
*one*  
*2057 (2)*  
Trochammina

Zone.

Wilcox?

Fragments of clay as above, and many fragments of a very finely sandy, hard, dark brown limestone. Sample contains some specimens of Trochammina sp. Marginulina cf. variata, Cibicides cf. Midwayensis, and Robulus cf. Midwayensis. See #51 on slide.

3500 - 30'

Like the preceding.

3530 - 60'

Apparently similar to the above, but not well washed.

3690 - 3710'

Cuttings of hard, dark brown, irregularly very finely sandy limestone. About 50% of sample fragments of several types of gray and tan, in part silty to very finely sandy clay. Some shell fragments. The clays at this depth are apparently somewhat harder than those described from higher depths in the hole.

3710 - 40'

Like the preceding.

3770 - 3800'

Sample composed mainly of gray, silty to very finely sandy, micaceous clay. Some fragments with small streaks and nodules of hematite.

3800 - 30'

Approx. top

Midway

Paleocene

Composed mainly of fragments of several types of gray shaley clay, which vary in color from medium to moderately dark gray, and vary also in the very fine sand to silt content. Some of the clay very finely and moderately micaceous, and several of the clay types show minute fragments and specimens of microfossil material. A few fragments of sandstone, a few fragments of clay iron-stone, a few specimens of Trochammina sp. as above. (See #52 and 53 on slide.)

3830 - 60'

Material and fauna like the preceding.

3890 - 3920'

Material as above, and many fragments of materials and some fossils obviously caving from much higher depths.

*TROCHS.*  
*GWS*



3950 - 80'

Sample composed mainly of fragments of gray clay shale, and brownish gray silty to gray finely sandy clay shale, occasional fragments of hard sandstone and other materials (apparently caving), very small forams and very finely fragmental fossil material, and some small streaks and nodules of hematite in some of the gray clay shale fragments. A few fragments of larger hematite nodules. Some forams caving from various higher depths. Caving forams shown on #59 and 60 on slide. The gray shale with hematite inclusions and some mica is irregularly silty and also contains in the silty areas much very fine fossil material. This clay shale apparently came into the section about 3770' below a long series of samples in which fragments of hard, dark brown, very fine grained, dense sandstones were dominant in the samples. Some very small forams, mainly species of Globigerina and a few specimens of Globorotalia seen in the fine screenings.

3980 - 4010'

Mainly gray clay shale fragments as above. Fauna also same as above.

4040 - 70'

Like the preceding. A few fragments of the gray clay, also finely carbonaceous.

4160 - 90'

Gray shaly clay as above, also many fragments of a light bluish gray clay shale new to the section. For the contrast between the dominant type of clay shale in immediately preceding samples and the new type introduced in this sample, see #54 to 57 on slide. Some very fine mica, extremely fine particles of a green mineral (possibly glauconite), very fine microfossils and fragments irregularly distributed in gray shale. For small forams common in this sample, see #58 on slide.

4190 - 4220'

Material and fauna same as above. Fauna Paleocene in character. A Tanneri faunal fauna.

4220 - 50'

No change.

4250 - 4370'

No change.

4430 - 60'

Gray, irregularly silty, and irregularly very fine microfossiliferous, shaly clay. Also fragments of a darker brownish gray, shaly clay, which may have been drilled at this depth. Microfauna sparse. Same as above in character.

4460 - 90'

Like the preceding.

4490 - 4550'

No change.

4550 - 60'

Fragments of the soft dark brownish gray clay shale now

58 HAS  
GLOBIGERINA  
PSEUDODONALIA  
(P. pseudodonalia)

POB. 2 cm  
on  
59-60

W. TANNERI  
1954

4570 - 80' 4570  
Top of  
Cretaceous  
Navarro.

Materials and fauna as above, also rare fragments of a hard white chalk, containing small Gumbelina (Cretaceous type.)  
See #1 on slide 2.

4590 - 4600'

Mainly gray, shaly clay as above, but with a few fragments of the moderately hard, white, finely microfossiliferous chalk first noted in preceding sample.

4600 - 10'

Like the preceding but with a marked increase in fragments of microfossiliferous chalk present. Some fragments show specimens of Globotruncana.

4620 - 30'

Many fragments of moderately hard, white chalk that contains abundant calcitised specimens and fragments of foraminifera including Globotruncana and Gumbelina. About 75% of sample stillavings of clay shale from the overlying Paleocene deposits.

4630 - 60'

Like the preceding. An occasional fragment of Inoceramus present.

4650 - 60'

Like the preceding.

4660 - 70'

No change. Common forams present are Ammodiscus cretaceus, Clavulinoides trilaterus, Gumbelina globulosa, Pseudotextularia plummerae, Pseudotextularia elegans, Globotruncana (several species), Arenobulimina cf. americana, Cibicides harperi, and others.

4680 - 90'

Cutting of about 50% chalk containing a large amount of very fine microfossil material; and 50% fragments of dark gray, soft shale, gray, irregularly silty, clay shale with very small forams, and very finely broken fragments of microfossils; and soft, generally highly silty, brownish gray, clay shale, with abundant very small forams and very finely fragmental fossil material. Shale and clay fragments probably mainly caving. A few pyrite nodules and some forams wash free. Fauna Navarro in character. Specimens of Cibicides harperi fairly common at this depth. A few specimens of Globorotalites conicus present. See #1-3 on slide 2 for Navarro fauna to this depth.

4690 - 4700'

Like the preceding. Some specimens of Lituola taylorensis present. See #4 on slide 2. *could be misinterpreted*

4700 - 10'

Like the preceding.

4720 - 40'

Samples now about 75% chalk fragments; 25% clay shale. Many specimens of Lituola taylorensis. A few fragments of Inocera-

Sample mainly dark gray shale and some fragments of lighter colored clay shale (caving), and 50% to 75% fragments of white, highly and generally finely microfossiliferous chalk. Specimens of Lituola taylorensis, some Robulus sp., Bolivina incrassata, Globorotalia (several species), Globorotalites conicus, Gyroldina girardana, Stensioidina americana, Planulina spissocostata, Gaudryina laevigata, Heterostomella americana, and others.

Mainly soft dark gray shale and white chalk as above.  
Lituola taylorensis the only foram common. For dark gray shale, see #8 and 9 on slide 2.

Sample composed mainly of several types of gray clay shale, (this, at least in part mainly caving.) White chalk fragments comparatively rare (not over 25%). Some specimens of Lituola and a few other forams.

**Like the preceding.**

Chalk about 20%; gray shale and gray clay shale about 80%.  
Lituola, specimens of Robulus sp., Lituola, and Globotruncana  
noted, and occasional specimens of other forams listed above.

Like the preceding. A few specimens of Stensiolina americana also present.

Gray clay shale as above and about 20% chalk fragments. Few forams. Fauna similar to preceding. A few fragments of *Inoceramus* and a few forams as above.

Similar to preceding. Chalk fragments about 25% of sample.

Sample similar to preceding. Chalk fragments slightly more abundant. A few fragments of Inoceramus, and a few forams. Fauna same as preceding in character.

Sample about 50% gray shale and clay; and 50% moderately hard, white, finely microfossiliferous chalk. Fragments of Inoceramus sp., Lituola, and Globotruncana fairly common.

Like the preceding.

**No change.**

About 50% chalk and 50% gray clay shale of which several types

finely and irregularly chalk streaked gray shale (see #12 and 24 on slide 2) similar to that seen in parts of the Austin section in more eastern Florida wells. Few forams washing free. Globotruncana the only fairly common foram noted. Specimens of Lituola still appearing in samples.

- 5050 - 60' Fragments of several types of gray shaly clay, and about 50% fragments of moderately hard, finely microfossiliferous, white chalk. Some specimens of Lituola. Specimens of Globotruncana fairly common as above.
- 5060 - 70' Like the preceding.
- 5080 - 5100' No change.
- 5100 - 20' Chalk and gray clay shale as above. Some fragments of the finely and irregularly chalk streaked, gray, clay shale. Fragments of Inoceramus, and some specimens of Lituola and of Robulus sp.
- 5120 - 30' Like the preceding. Few forams.
- 5140 - 50' Sample composed mainly of several types of gray shale and clay shale, a small amount of moderately hard chalk. Gray shale probably being drilled. A few fragments of Inoceramus. Very few forams washing free - those present mainly coming from Paleocene.
- 5160 - 80' Like the preceding.
- 5180 - 5200' No change.
- 5200 - 10' Chalk fragments again forms about 25% of washed sample concentrate. Several types of gray shale and shaly clay represented in shale content. Some fragments of several types contain numerous small forams of Cretaceous age indicating the presence of at least occasional shale lenses in the chalk section. Very few forams washing free. Species of Globotruncana the only fairly common forms present.
- 5220 - 30' Similar to the preceding. Chalk fragments about 50%, gray shaly clay about 50%. Very few free forams. Species as above.
- 5240 - 60' Like the preceding.
- 5260 - 80' Gray clay and shaly clay fragments again strongly dominant in the sample. Few fragments of chalk. Sparse fauna as above. No new elements introduced into faunal population.

#10 -  
B. DECORATUS  
T. P. of Austin  
T. P. of Austin

very few free forams. Many very small embedded forams, fine fossil fragments in chalk and in many of the gray shale fragments.

5320 - 40' Mainly gray shale and clay of several types. Little chalk. Very few forams washing free.

5340 - 60' Like the preceding.

5370 - 80' No change.

5380 - 5440' No change.

5440 - 60' Cutting composed almost entirely of several types of gray clay, differing slightly in color, and texture from each other. A trace of chalk. Very few forams washing free. Fragments of a soft, dark brownish gray shale with many fine, cream colored, crushed and fragmental forams and very finely broken shell material. Clay shale of this type often present in beds of Austin age, but no diagnostic forams noted. For this shale see #13 on slide 2.

5470 - 80' Like the preceding.

5480 - 5500' Clay and shale as above, fragments of the dark gray, occasionally "light speckled" (very fine fossil material) forms about 75% of sample content. A few small Gumbelinas, Globotruncana and Planulinas washing free in this sample. For the dark shale, see #14 on slide 2.

5500 - 10' Sample represented by a number of types of gray shale and shaly clay. Some dark shale as above.

5520 - 30' Like the preceding.

5530 - 40' Gray shale and clay as above. Moderately dark gray marly shale fragments common. Very few forams washing free. Some Globotruncanas and Gumbelinas noted in some of the shale fragments. Embedded fossil material noted usually very small.

5540 - 50' Similar to the above. Dark, slightly brownish gray, soft shale fragments moderately common.

5560 - 70' Like the preceding.

5580 - 5600' Like the above - A few fragments of the highly finely chalk streaked, dark gray shale present also, a pyritised fragment of Inoceramus. A few free Cretaceous forams as above.

5600 - 10' Like the preceding.

As with

PLAN. NUBIENSIS  
GLOBOTRUNCANA  
GUMBELINAS

Back SH  
on

- 5620 - 40' Gray shale and clay as above. Also a chalk fragment.
- 5650 - 60' Like the preceding.
- 5660 - 80' No change.
- 5680 - 5740' No change.
- 5740 - 60' Gray shale and clay fragments as above, and about 20% fragments of white and of light gray chalk. Minute forams common in the chalk and in some of the clay shale fragments. Few forams washing free.
- 5770 - 80' Similar to the preceding. Chalk fragments about 50% of sample.
- 5790 - 5800' Like the preceding.
- 5830 - 40' Like the preceding.
- 5840 - 60' Like the preceding. Some fragments of the thinly and irregularly chalk-streaked, dark gray shale similar to that noted from somewhat higher depths.
- 5860 - 80' Like the preceding.
- 5880 - 90' No change.
- 5900 - 20' No change.
- 5920 - 40' Cutting of several types of gray to dark gray shale and clay. Some fragments of white and of light gray chalk. A few specimens of Globotruncana and Gumbelina in the fine screenings.
- 5940 - 60' Like the preceding.
- 5960 - 80' No change.
- 5980 - 6000' No change.
- 6000 - 10' Several types of gray shale and clay as above, also many fragments of the very thinly laminated dark brownish gray "speckled" shale common in the basal portion of the Austin in southeastern Gulf Coast area. See #16 and 17 on slide 2.
- 6030 - 60' Sample composed mainly of white chalk; light gray, marly chalk; and dark brownish gray, "speckled" shale.
- 6060 - 90' Like the preceding.

✓ - AUSTIN  
MICRO-LAMINATE

6120 - 50'

No change.

6150 - 80'  
Approx. top  
of

Eagle Ford  
(U. Tusc.)

or  
U. Atkinson

6180 - 6210'

6210 - 40'

6240 - 70'

6270 - 6300'

6300 - 30'

6330 - 60'

6360 - 90'

6390 - 6420'

6420 - 50'

Chalk and shale fragments as above. Also many fragments of a white, fine grained, calcareous sandstone. Grains containing some mica and abundant fragments of fossil bivalves (mainly *Ostrea* sp.) and a trace of glauconite. Sand grains clear, quartzitic, sharply angular. Some small fragments of a slightly greenish gray, silty and micaceous shale present, also probably coming from this depth. A specimen of *Kyphopyxa christneri* (probably coming from somewhat higher depths). For new materials see #18 to 23 on slide 2.

Like the preceding. A fragment of *Inoceramus* in the sandstone. More fragments of the greenish gray shale.

Like the preceding.

Sample mainly several types of gray marly shale (probably largely caving.) Little sandstone and greenish gray shale.

About 50% white to light gray, very fine and sharply angular grained sandstone containing many fragments of *Ostrea* shells and some fragments of other bivalves, a trace of bright green glauconite and a small amount of mica; 50% several types of dark gray shale and marly shale (some of this probably caving) and many fragments of a slightly greenish gray, flaky and micaceous shale, probably coming from this depth.

Sample mainly gray shale and marly shale of several types, including many fragments of a flaky, finely micaceous, gray shale that contains a large amount of minute fragments of microfossil material. A specimen of *Planulina eaglefordensis* noted on one of these fragments, see #25 on slide 2. (Some fragments of fossiliferous sandstone as above.)

Mainly fragments of micaceous gray shale as above, and cavings of several types of gray shale and marly shale from higher depths.

Cutting composed mainly of micaceous, flaky shale as above, some fragments of fossil bivalves and cavings of other gray shale and marly shale from higher depths.

Mainly flaky fragments of a gray, irregularly highly micaceous shale. A few fragments of greenish gray, calcareous, silty clay. Cavings of other types of gray shale and marly gray shale.

Like the preceding, also some fragments of a brown, micaceous, soft, flaky shale. See #26 to 28 on slide 2.

mon. A few fragments of fine grained, calcareous, micaceous and slightly glauconitic sandstone. Some of the fragments with attached fragments of nacreous shell material

6480 - 6510'

*ARMY MIC.  
SH*

Mainly soft, dark gray, flaky, irregularly micaceous shale, contains a few minute fragments of fossil material. A few macro-fossil fragments also present in sample. Some cavings. For typical samples of shale at this depth, see #29 and 30 on slide 2. Shale also contains a small amount of carbonaceous material.

6510 - 40'

Cutting of soft, flaky mica, and slightly carbonaceous shale as above. A few fragments of very fine grained, calcareous, light gray sandstone, and a few fragments of fossil bivalves washing from the sandstone.

6540 - 70'

*ARMY OK*  
Cutting of soft, dark gray, flaky, micaceous shale, and some fragments of brown shale having a similar texture. For samples of the shale, see #31 and 32 on slide 2.

6570 - 6600'

Dark gray and brown, finely flaky, micaceous and occasionally finely carbonaceous shale like the preceding. Brown fragments common. A few fragments of sandstone.

6600 - 20'

Cutting of gray shale like that above.

6620 - 40'

Shale as in preceding sample, a few fragments of very fine grained, light gray sandstone, and a few fragments of macro-fossil material.

6640 - 60'

Shale fragments similar to preceding but many fragments at this depth having a silty appearance. A few fish scale fragments noted in shale.

6660 - 80'

Like the preceding.

6680 - 6700'

No change.

6700 - 40'

No change.

6740 - 60'

Like the preceding, but some fragments of a very fine grained, slightly glauconitic sandstone present (this may be cavings since other materials definitely caving are fairly common in sample).

6760 - 80'

Like the preceding.

6780 - 6800'

No change.

6800 - 20'

Flaky, gray, micaceous shale like that above, and a few fragments of light gray, calcareous, extremely fine grained, mica-



6820 - 40'

Shale as above, also numerous fragments of light gray, highly micaceous siltstone and extremely fine grained sandstone. This material is also irregularly finely carbonaceous and sideritic, contains a trace of glauconite. See #34 to 36 on slide 2.

6840 - 60'

Shale as above, very little sandstone, some of the shale fragments highly micaceous and silty.

6860 - 80'

Approx. top  
of Middle (marine)

Tuscaloosa #  
(L. Atkinson)

6880 - 6900'

Shale as above, some fragments of sandstone as at (6820-40'), and a few fragments of dark gray, "speckled" shale.

Flaky, gray and greenish gray mica, and, in part, silty shale like the preceding; a few fragments of the sandstone as above; also some fragments of a very dark gray, flaky, somewhat "speckled" shale with an oily appearance. See #37 to 39 on slide 2.

6900 - 20'

Flaky, gray, dark gray, greenish gray and brownish gray mica shale as above. Some fragments highly silty; a few finely carbonaceous.

6920 - 40'

Gray, light and dark brown, micaceous, thinly flaky shale. A few fragments of red shale, and a few dark gray, "speckled" shale.

6940 - 60'

Gray, dark gray and greenish gray, thinly flaky, micaceous shale. A few fragments of "speckled" shale.

6960 - 80'

Similar to preceding, but more fragments of the flaky, dark gray, "speckled" shale, and some fragments of a silty and micaceous, greenish gray shale.

6980 - 7000'

Like the preceding. Less "speckled" shale.

7000 - 20'

Flaky, micaceous, gray shale as above, with fragments of the black or very dark gray, micaceous, oily looking shale common and many fragments of the "speckled", dark gray, flaky shale. "Speckled" appearance due to presence of small, usually crushed and stained, small fragments and specimens of microfossils. A few uncrushed forams noted in occasional fragments. See #40 to 44 on slide 2. A few fragments of dark brownish gray, moderately hard, platy siltstone which probably represents thin lenses in the black shale.

7020 - 40'

Like the preceding.

7040 - 60'

Cutting of flaky shale as above. Fragments of the black,

V. A. 716  
SS  
M4, from  
(6800-7000)

V. D. Brown  
SH -  
not typical  
A.M.

HARD SH,  
mostly  
MIC  
3' thick A.M.

7060 - 80'

Dark gray, flaky, mica shale as above, and many fragments of the "speckled", dark gray, flaky shale. Typical fragments of the "speckled" shale shown on #45-46, slide 2. Some very thin, dark gray, silty and highly micaceous lenses represented by fragments. A few poorly preserved specimens of Globigerina, Rotalipora and Planulina(?) washed from the black shales, and very small embedded specimens of Gumbelina, Globigerina, and others (not determined) are present on many of the shale fragments. See #47 on slide 2 for free forms.

7080 - 7100'

Like the preceding. For example of typical platy, micaceous, silty lense, see #48 on slide 2.

7100 - 20' <sup>7075</sup>  
Approx. top  
of Lower  
Tuscaloosa.  
(L. Atkinson)

Shale as above, and fragments of the black "speckled" shale with the crushed and stained fossiliferous material that gives the "speckled" appearance more coarsely broken than at higher depths. Sample also contains some fragments of a white to light gray, fine, angular grained, glauconitic, quartzitic sandstone. Sand grains in this sandstone average coarser than any found in the Eagle Ford (Upper Tuscaloosa) section, and glauconite(?) much more abundant. See #49-52 on slide 2. The sandstone contains some shell fragments.

7120 - 40'

Sample composed mainly of thinly flaky fragments of dark gray, micaceous shale; and some dark gray, platy fragments of highly micaceous and highly silty shale. A few fragments of sandstone as above.

7140 - 60'

Similar to preceding, but with numerous fragments of a highly and rather coarsely "speckled" shale.

7160 - 80'

Mainly thinly flaky, dark gray shale. Some fragments of platy, dark gray, micaceous, highly silty shale; a few fragments of the "speckled" shale as above; and an occasional fragment of sandstone as at 7100-20'.

7180 - 7200'

Like the preceding, but with fragments of a light greenish gray, glauconitic and slightly micaceous, very fine grained sandstone fairly common.

7200 - 20'

Like the preceding.

7220 - 40'

Cutting of flaky, dark gray mica shale; some fragments of "speckled", dark gray, flaky shale; a few fragments of glauconitic sandstone like that above; and some platy, highly silty and micaceous shale.

7240 - 60'

Shale as above, and many fragments of very fine grained, glauconitic, calcareous, white to light gray sandstone.

- 7260 - 80' Sample composed of fragments of dark gray, flaky, micaceous shale; many fragments of coarsely "speckled", dark gray shale; some fragments of gray, highly silty, greenish gray clay; and many fragments of light gray, fine to very fine grained, glauconitic and somewhat micaceous sandstone.
- 7280 - 7300' Like the preceding. An occasional fragment of Inoceramus washing from the shale.
- 7300 - 10' No change.
- 7320 - 30' Similar to the above. Less "speckled" shale.
- 7340 - 60' Abundant fragments of the dark gray, flaky, micaceous shale. Some fragments of the "speckled", dark gray shale, and of the highly silty and micaceous shale; and numerous fragments of gray to light brownish gray, fine grained glauconitic and micaceous sandstone.
- 7360 - 80' Mainly flaky, dark and very dark gray, irregularly micaceous shale, a little "speckled" shale, and highly silty shale, and many fragments of fine to very fine grained, glauconitic and somewhat micaceous sandstone.
- 7380 - 90' Like the preceding. Sandstone fragments less common.
- 7390 - 7400' Same as above.
- 7400 - 10' Shale as above, and many fragments of very fine grained, glauconitic and micaceous sandstone. A few fragments of fossil bivalves in the shale.
- 7410 - 20' Like the preceding.
- 7420 - 30' Shale and some silty shale as above, a little "speckled" shale, a small amount of sandstone.
- 7430 - 40' Like the preceding.
- 7440 - 50' No change.
- 7450 - 60' Shale and some "speckled" shale as above. Fragments of glauconitic sandstone again fairly common. A few shell fragments in the shale.
- 7460 - 70' Like the preceding. For "speckled" shale fragments, see #52 and 53 on slide 2.
- 7470 - 80' Flaky, dark gray, mica shale, some silty shale, some fragments of the dark gray, "speckled" shale, and some fragments of fine

Micro  
Laminar  
SH  
5 mm AM

7480 - 7500'

56-58  
V.P. F. - Com  
1 MP Com  
SS -  
S. M. L. M.

62 is in  
C.M.

Shale as above, also fragments of several types of glauconitic sandstone, including fairly numerous fragments of an extremely fine grained, glauconitic, argillaceous and calcareous sandstone which contains some fragments of Oystrea-like bivalves. For samples of this sandstone and of another "speckled" dark gray shale fragment with a fragment of a fossil bivalve attached, also a fragment of dark shale in contact with the extremely fine grained sandstone (indicating the finely lenticular character of much of the sandstone), see #56 to 58 on slide 2.

Note - (Specimens on #60 in slide 2 are good specimens of forams that have caved from much higher depths than the levels from which they were picked.)

7500 - 20'

Cutting of dark gray flaky shale, a little "speckled" shale, and a small amount of sandstone as in preceding.

7520 - 40'

Sample of dark gray shale and some "speckled" shale, very little sandstone.

7540 - 60'

Like the preceding.

7560 - 70'

No change.

7580 - 7600'

No change.

7600 - 20'

Dark gray shale and some "speckled" shale as above, also numerous small fragments of white, very fine grained, loosely consolidated, micaceous and slightly glauconitic sandstone.

7620 - 40'

Shales as above, very little sandstone. A few small fragments of fossil bivalves.

7640 - 60'

Com. S. R.  
up SS -  
Comanche

Shale as above, also numerous fragments of a medium grained - 0.25 to 0.55 m.m. - quartzitic sandstone, which contains some coarse quartz grains - 0.5 - 1.00 m.m. -, some of these coarse grains pink tinted. A few shell fragments also present in sandstone. For coarse sand grains and sandstone, see #1 and 2 on slide 3.

7660 - 80'

Similar to the preceding. Coarse quartz grains common in this sample.

7680 - 90'

No change.

7690 - 7700'

Approx. top  
of Comanche.

Bulk of sample flaky, dark gray shale as above, fragments of a loosely cemented, fine grained, micaceous and pyritic sandstone fairly common; a very few fragments of a waxy, brownish red shale and a fragment of gray and red mottled shale. For red shale and sandstone, see #3 and 5 on slide 3.

W. H. S. H.

7680 - 7700'

Like the preceding - more medium sized quartz grains. A few fragments of the red and red and gray mottled shale.

7700 - 10'

Sample of flaky fragments of gray micaceous shale, a few fragments of blue, gray and red mottled, very finely micaceous shale, and many fragments of a very fine grained, slightly micaceous sandstone. For fragments of the sandstone and red mottled shale, see #6 and 7 on slide 3.

7710 - 20'

Gray shale as above, and many fragments of a brownish red shale. Some fragments of sandstone as above.

7720 - 30'

Gray shale as above, and about 50% red, micaceous, and gray mottled shale, and gray and ochre mottled shale. For these colored shales, see #8-11 on slide 3.

7730 - 40'

Like the preceding.

7740 - 50'

Material as above, also some fragments of very fine grained, white sandstone that may be caving.

7750 - 60'

Flaky gray shale and red and gray, red and ochre mottled shale as above, and many fragments (about 50%) of very fine grained, white, micaceous sandstone. Some of sandstone fragments highly micaceous. A fragment of red shale with an embedded, glauconitic mold of a Chara present, also a few red stained lime nodules. For sandstone and lime nodules, see #12 and 13 on slide 3.

7760 - 70'

Flaky gray shale, and about 50% red and mottled shale. A few fragments of sandstone.

7770 - 80'

Flaky and gray shale, and red shale as above. Some fragments of very fine grained, white, micaceous sandstone. Some highly silty and micaceous, greenish gray clay shale also present and possibly coming from near this depth.

7780 - 90'

Dark gray and red shale as above, and a small amount of sandstone. Some greenish gray, micaceous and glauconitic clay shale as mentioned in preceding sample.

7790 - 7800'

Gray, flaky mica shale, and many fragments of the soft, flaky, greenish gray, micaceous, very finely glauconitic, silty and finely carbonaceous clay shale mentioned above. Many fragments of red shale. For the greenish gray, micaceous and silty clay shale, see #14-16 on slide 3. A few fragments of green (nodular?) limestone, and a few fragments of more indurated, bright green shale, (see #17 and 18 on slide 3.)  
A few fragments of fossil bivalves (possibly caving.)

V.M. OK

O. C. M. S. H.  
non, yellow

Red, gray, green  
shales,  
gray S. 100 m.  
O. C. M. S. H.

15, 16 -  
Many very  
fine SH  
This, probable  
top of marine  
Buda. section.  
ERA.  
17-APR 1955 O. C. M. S. H.

- 7810 - 20' Like the preceding.
- 7820 - 30' No change.
- 7830 - 40' About 50% dark red, flaky shale and some red-gray, blue green and mustard mottled shale; and 50% flaky fragments of dark gray shale (probably caving), a few fragments of a white, highly micaceous, fine sandstone.
- 7840 - 60' Similar to preceding, but with fragments of the white, fine grained, micaceous sandstone much more common.
- 7860 - 80' Red and some multicolored shale, and gray, thinly flaky shale, and some fragments of sandstone like that above.
- 7880 - 7900' Like the preceding. Fragments of nacreous shelled bivalve present in some of the sandstone fragments. See #19 on slide 2.
- 7910 - 20' Like the preceding.
- 7920 - 40' No change.
- 7940 - 60' Red shale and dark gray fissle shale as above about 50%; and fragments of the white, irregularly highly micaceous and occasionally fossiliferous (shell fragments) calcareous, fine grained sandstone about 50%. Some of the sandstone fragments also highly carbonaceous.
- 7960 - 80' Shale and sandstone fragments as above. Sandstone contains many shell fragments. Sandstone is light gray, calcareous, generally silty to very fine grained, micaceous. Many fragments silty in texture, light tan in color, and contain abundant fragments of heavy shelled bivalves and a few small Gastropods. This material possibly dolomitic. See #20 to 24 on slide 3.
- 7980 - 8000' Flaky, dark gray shale, and micaceous, reddish brown shale about 50%, and fragments of white, very fine grained, micaceous sandstone about 50%. A few shell fragments (probably caving.) A few limonite nodules.
- 8000 - 20' Gray and red shale as above. Some sandstone.
- 8020 - 40' Dull red shale - about 25% flaky gray shale, and some dark gray carbonaceous shale. A few fragments of sandstone, some shell fragments.
- 8040 - 60' Brownish red and some red and gray mottled shale, about 25% gray fissle shale and sandstone fragments. A few fragments of bright green shale.

20-24  
16 m  
of 5700  
SHALON

Pen. of  
OSM not seen  
SH, calcareous

0000 - 0100  
Flabellamina,  
Buda. age -

red shale and flaky gray shale like that above, and some fragments of fine grained, fossiliferous, calcareous sandstone and finely sandy white limestone (fragments of fossil bivalves). A few fragments of a waxy gray-green silty shale containing specimens and fragments of Flabellamina denisonensis and some small Ostracods. See #25 to 34 on slide 3. Flabellamina, and shell fragments in both the shale and the white, very finely silty limestone.

8100 - 20'

Fragments of red and of gray shale as above, and about 50% fragments of micaceous white sandstone, and very finely sandy white limestone containing many shell fragments about 50%. A few fragments of the olive green shale as above. Some specimens of Flabellamina present.

8120 - 40'

Many fragments of gray and of dark red shale as above and some fragments of dark olive green shale, many fragments of white, micaceous, very fine grained sandstone. A few fragments of white, finely sandy limestone containing shell fragments. A fragment of Flabellamina as above.

8140 - 60'

About 33% red shale - 33% flaky dark gray and gray silty shale. 33% white, irregularly silty limestone with irregular gray markings (fragments of fossil material?). Some fragments of fine grained white sandstone. The limestone occasionally shows fragments of molds of Gastropods and Pelecypods.

8160 - 80'

Similar to preceding - proportionally less sandstone and limestone.

8180 - 8200'

Red shale and gray shale fragments as above, and about 50% fragments of a fine grained, frequently highly micaceous, light red sandstone.

8200 - 20'

About 50% of sample gray and red shale fragments in about equal proportions, and 50% fragments of white, micaceous, fine grained sandstone, and some fragments of the white, irregularly silty limestone with shell fragments.

8220 - 40'

Gray and red shale fragments as above, and many fragments of the white, gray spotted limestone with many macro-fossil fragments.

8240 - 60'

Sample about 50% red shale and gray shale (in part silty, and 50% very fine grained, micaceous, white and some light greenish gray sandstone.) A few shell fragments.

8260 - 80'

Sample mainly red and gray shale, and some mottled shale (red and light gray and red and mustard color.)

8280 - 8300'

Like the preceding. More sandstone.

8640 - 60'

Shale as above, and some white micaceous sandstone. Some of the sandstone fragments have shell fragments attached.

8660 - 80'

Shale as above, and about 25% micaceous, white, fine to very fine grained sandstone.

8680 - 8700'

Shale as above, and a few fragments of white, hard, fossiliferous limestone.

4450' 8'  
8700 - 20'

Prob. top of Fredericksburg

Red, dark gray, and some mottled shale, a few fragments of sandstone, and some fragments of a hard, light gray limestone which contains abundant small fragments of fossil debris.

8720 - 40'

Like the preceding, but more fragments of the limestone. Limestone is light gray, has many fragments of fossil bivalves and dark gray spots that probably represent pyritic(?) molds of Ostracods and other microfossils and fragments. Limestone is very finely dolomitic, in part. Some fragments of limestone silty and slightly micaceous. See #45 - 48 on slide 3.

8740 - 60'

Red, gray and multicolored shale. Some fragments of white, micaceous sandstone, a few fragments of limestone as above.

8760 - 80'

Shale as above, and about 25% fragments of micaceous, calcareous, fine to very fine grained sandstone.

8780 - 8800'

Shale as above, also many fragments of a white limestone containing abundant fragments of Pelecypods, some Ostracods, and other fossil debris. A fragment of dark gray, fossiliferous shale also present. Some fragments of a highly silty, fossiliferous limestone. See #48, 60 and 49-52, on slide 3.

8800 - 20'

Red, gray and some multicolored shale as above, and many fragments of the bioclastic, white limestone, also, as above. Limestone contains abundant fragments of fossil bivalves and other fossil debris. No determinable fossil material.

8820 - 40'

Shale as above, and many fragments of fossiliferous limestone like that above.

8840 - 60'

Shale as above, and many fragments of light gray to white limestone. Limestone is dolomitic and somewhat silty, in part highly and finely gray spotted, generally small circular to broadly elliptical spots - pseudo-collitic(?) - and in part, more coarsely spotted. Many "spots" in coarsely spotted fragments represent sections of Lituola cf. subgoodlandensis. Many free forms of this foram also washing from soft fragments of the limestone. For limestone and forams, see #53 - 59 on slide 3. A small bivalve also present in this limestone.

45-47 is  
A S. from  
Ostracod  
from U.S.  
P. B. W. - U.S.  
D. C. W. - U.S.

the fossils  
fragments  
U.S. OK

U.S. OK  
V. P. W. - U.S.  
D. C. W. - U.S.



many fragments of limestone. Limestone gray as above, with many fragments of fossiliferous shell material and some other fossil debris. Some marly fragments of the limestone contain fragments of Lituola cf. subgoodlandensis. Specimens of this fossil washing free, fairly common in sample. See #7 and 8 on slide 4.

9120 - 40'

Shale as above, and some fragments of gray, brown, and white, gray spotted limestone.

9140 - 60'

Like the preceding. Some highly fossiliferous (shell fragments) nodules in black shale.

9160 - 80'

Like the preceding.

9180 - 9200'

Red and gray shale as above, and many fragments of white, gray spotted and olive gray, fossiliferous limestone. Fossiliferous material - fragments of macro-fossils and molds of fossil fragments.

9200 - 20'

Like the preceding.

9220 - 40'

No change.

9240 - 60'

No change.

9260 - 80'

Red and dark gray shale as above, and many fragments of limestone. Some fragments of the limestone moderately soft, cream colored, dolomitic and highly gray spotted. Gray spots usually rounded to slightly elliptical and moderately even in size, giving this limestone a pseudo-oolitic appearance. A trace of bright green glauconite in this limestone. See #9 - 12 on slide 4.

9300 - 20'

Dark gray, brownish red and some mottled shale. A few fragments of micaceous sandstone, and many fragments of olive gray and cream colored, gray spotted dolomite, and slightly silty limestone. A trace of glauconite in some of the brown, dolomitic limestone fragments. Limestone has small fragments of shell and traces of other fossil debris. See #13 and 14 on slide 4.

9320 - 40'

Dark gray and some red shale. Fragments of brownish gray limestone like that above common. Limestone contains fragmental fossil material.

9340 - 60'

Shale and limestone as above, cream colored, gray spotted limestone fragments also common. These show a trace of glauconite in some of the dark gray spots which probably represent fragments of fossil molds.

9360 - 70'

Like the preceding. Limestone fragments very common, both cream colored, dark gray spotted, and olive gray limestone fragments common. Some of the olive gray fragments, highly dolomitic. Both limestones contain very fragmental and poorly preserved fossil material, mainly shell fragments.

9370 - 80'

Like the preceding.

9380 - 90'

As above. A little glauconite in many of the limestone fragments.

9390 - 9400'

Shale as above, and many fragments of white, very fine grained, micaceous and calcareous sandstone. Some fragments of limestone.

9400 - 10'

Mainly dark gray and some brownish red shale. A little limestone.

9410 - 20'

Dark gray and some red shale, and many fragments of limestone. Limestone apparently varies rapidly and irregularly from brownish gray, crypto-crystalline, to moderately soft, cream colored, dark gray spotted. Shows abundant traces of fossil material, but nothing determinable. Has a trace of glauconite.

9420 - 30'

Shale as above, and many fragments of a cream and gray limestone with moderately large, rounded, brown and gray spots. Spots are relatively uniform in size, shape and general distribution in the limestone giving the limestone a pseudo-oolitic appearance. See #15 - 20 on slide 4. Sections indicate that spots in limestone fragments generally represent sections of molds of Lituola sp.

GOOD CONTACT  
IN MIDDLE  
MARK

9430 - 40'

Like the preceding. Limestone fragments abundant in sample.

9440 - 60'

Shale as above, and many fragments of limestone like that described from immediately preceding samples.

9460 - 80'

Dark gray and some red shale. Some fragments of very fine grained, micaceous sandstone, and a few fragments of limestone.

9480 - 9500'

Flaky, dark gray, and dull brownish red shale. A few fragments of sandstone and of limestone.

9500 - 20'

Mainly shale as above. Some very fine grained, micaceous sandstone. Trace of limestone.

9520 - 40'

Like the preceding.

9540 - 60'

Shale as above, some fragments of sandstone, and some of limestone. Limestone similar in character to that described from preceding samples.

Dark gray, and brownish red shale, and many fragments of brownish gray, and cream colored, gray spotted limestone similar to preceding limestone, but less uniform in character. Limestone contains much fragmental shell material and fragments of molds of other fossil material. A trace of sandstone.

9600 - 20'

Shale as above. A few fragments of sandstone and of limestone.

9620 - 40'

Red and dark gray shale, also many fragments of an oolitic, anhydritic and highly silty to sandy, brown and gray spotted limestone. These spots mainly true oolites. See #21 - 23 on slide 4. Shell fragments also present in the limestone.

9648 - 60'

Shale as above, and many fragments of gray and of white, gray spotted limestone with fragmental and poorly preserved fossil material.

9660 - 70'

Shale as above, and many fragments of gray and of white, gray spotted limestone.

9670 - 80'

Shale as above, also many fragments of a hard, brown limestone with some traces of fossils. Some fragments of anhydrite. See #24 to 28 on slide 4.

9680 - 90'

Like the preceding. More anhydrite.

9690 - 9700'

Like the preceding.

9700 - 10'

Dark gray and some red shale, and abundant fragments of the grayish brown, hard, dense limestone, some fragments of the cream colored, dark gray spotted limestone. The brown limestone is sparsely fossiliferous as compared to the limestone described from younger portions of the Comanche section.

9710 - 20'

Dark gray and dark brownish red shale, and abundant fragments of the olive brown limestone which seems to vary, rapidly and irregularly from dense, brown and crypto-crystalline to cream colored, and soft textured. Limestone contains many traces of fossils as dark colored, rounded to elliptical molds, irregularly distributed, generally in the softer and lighter colored portions of the limestone. Molds and fragments of small fossil bivalves and some Ostracods noted. The dark spots give some of the limestone fragments a pseudo-oolitic appearance. A trace of anhydrite in sample, and trace of glauconite in spots on limestone. For typical examples of the limestone, see #29 to 32 on slide 4.

9720 - 30'

Similar to preceding. Limestone fragments much reduced in quantity.

9730 - 40'

Like the preceding. A trace of anhydrite.

- 9780 - 9800' Like the preceding.
- 9800 - 20' Shale as above, and many fragments of hard gray limestones.
- 9820 - 30' Mainly shale, a small amount of limestone, and a few fragments of sandstone.
- 9840 - 60' Like the preceding.
- 9860 - 80' Dark brownish red shale, and dark gray, and some gray-green shale - also many fragments of white, micaceous, fine to very fine grained sandstone. A few fragments of limestone, probably caving.
- 9880 - 9900' Like the preceding. A few fragments of light greenish gray limestone (possibly from nodules in the gray-green shale.)
- 9900 - 20' Flaky fragments of dark brownish red shale, and dark gray shale. Each about 50% of sample and each, irregularly finely micaceous. A few fragments of light to dark grayish brown limestone. Faint traces of fragmental fossil material in the limestone.
- 9920 - 40' Similar to preceding. Limestone fragments slightly more common, and some fragments of a brownish gray marly limestone, with many fragments of fossil bivalves.
- 9940 - 60' Shale as above, and many fragments of light to dark grayish brown, and brownish gray limestone. Many fragments of fossil bivalves in some fragments of the limestone.  
See #33 and 34 on slide 4.
- 9960 - 80' Shale as above, some limestone, and many fragments of fine to very fine grained, micaceous, white to reddish sandstone.
- 9980 - 10,000' Shale about 50%, sandstone 50%, some fragments of limestone. For sandstone, see #35 on slide 4.
- 10,000 - 20' Mainly dark gray, and brownish red, irregularly micaceous, flaky shale. A few fragments of sandstone and of limestone.  
Approx. top of Paluxy.
- 10,020 - 40' Like the preceding.
- 10,040 - 60' Red and gray shale as above, also many fragments of white, fine grained, weakly micaceous sandstone, a few fragments of limestone (probably caving.) For shale and sandstone, see #35 - 38 on slide 4.

Red SM  
& white SS  
AS AS

Note - Paluxy facies here not, faintly in sec. - In isolated wells basal

and a few of limestone of various types (probably caving.)

SS dk  
poorly  
sorted

- 10,080 - 100' Red and gray shale, and about 75% fragments of a white, fine grained, somewhat micaceous sandstone. (In sandstone above, the sand was graded in fragments and generally highly micaceous. In this sandstone, grains are fine to very fine, but usually poorly sorted in any fragments. Mica is much less common, a few grains of rose quartz are present, and matrix is white and ashy.) (Red shale also generally less micaceous.) For typical fragments of sandstone, see #39 and 40 on slide 4.
- 10,100 - 20' About 2/3rds sandstone as above, 1/3rd red, and many fragments of gray shale.
- 10,120 - 40' 50% red, and many fragments of dark gray shale, 50% sandstone as in preceding samples.
- 10,140 - 60' Mainly dark brownish red shale, some gray shale and mottled shale, about 25% sandstone as above.
- 10,160 - 80' About 50% sandstone, and 50% shale as above. Many of sandstone fragments light red and highly micaceous.
- 10,180 - 200' Like the preceding.
- 10,200 - 20' Red and gray shale about 75%, and 25% sandstone as above. Many of red shale fragments highly silty.
- 10,220 - 40' Almost entirely dark gray flaky, and dark brownish red, irregularly micaceous, and irregularly silty shale.
- 10,240 - 60' Like the preceding. A few fragments of sandstone of several types (probably caving.)
- 10,260 - 80' Dark brownish red, and some dark gray shale.
- 10,280 - 300' Like the preceding.
- 10,300 - 20' Sample about 75% red shale, and many fragments of red, micaceous, fine grained sandstone, about 25% dark gray shale.
- 10,320 - 40' Sample about 50% medium grained, irregularly micaceous, white, quartzitic sandstone, white (ashy) cement, 50% dark brownish red, and some dark gray shale.
- 10,340 - 60' Sample about 75% sandstone as above, 25% red, and some gray shale.
- 10,360 - 80' Sample mainly dark brownish red shale, some gray shale, and a few fragments of sandstone.

- 10,380 - 400' Like the preceding.
- 10,400 - 20' No change.
- 10,420 - 40' Shale as above, and some fragments of several types of sandstone (these may be caving.)
- 10,440 - 60' Shale as above, more fragments of sandstone.
- 10,460 - 80' Shale and some sandstone as above, also many fragments of light red, fine to very fine grained, micaceous sandstone.
- 10,480 - 500' Dark brownish red, and some gray shale. About 10% fragments of reddish, and some of white, micaceous, fine to very fine grained sandstone.
- 10,500 - 20' Dark brownish red, and some gray shale, also about 10% fragments of reddish, micaceous, fine to very fine grained sandstone.
- 10,520 - 40' Like the preceding.
- 10,540 - 60' Shale as above, and about 20% red sandstone. For fragments of the sandstone, see #41 - 43 on slide 4.
- 10,560 - 80' Red shale, and some gray shale as above. A small amount of sandstone.
- 10,580 - 600' Red and some dark gray shale as above. About 50% white and some light red, fine to very fine grained, irregularly micaceous sandstone. A little gray, reddish mottled mudstone.
- 10,600 - 20' Like the preceding.
- 10,620 - 40' Red and some gray shale, a small amount of sandstone, a little gray, reddish mottled mudstone.
- 10,640 - 60' Red and some gray shale, about 10% reddish and some white sandstone.
- 10,660 - 80' Like the preceding.
- 10,680 - 700' No change.
- 10,700 - 20' Red and some gray shale, about 20% white and reddish sandstone.
- 10,720 - 40' Red shale as above, about 75% white, fine to very fine grained, micaceous sandstone.

*Pinch  
Red 51*

- white and red sandstone as above.
- 10,780 - 800' Dark brownish red, micaceous shala, 20% gray shale, a few fragments of sandstone.
- 10,800 - 20' Red shale, and some gray shale as above. A few fragments of sandstone, a few cavings of limestone and anhydrite from higher levels.
- 10,820 - 40' Red, and a little dark gray shale as above, and about 50% white and light red, micaceous, fine to very fine grained sandstone.
- 10,840 - 60' Red and some gray shale, and fragments of several types of limestone, siltstone and sandstone (probably caving).
- 10,860 - 80' Red and gray shale as above. Some fragments of a gray, calcareous siltstone or silty limestone. A few fragments of sandstone.
- 10,880 - 900' Red and some gray shale. About 25% fragments of a white, fine to very fine grained, micaceous sandstone.
- 10,900 - 20' Mainly red, and some gray shale. A small amount of sandstone.
- 10,920 - 40' Red and some gray shale as above, about 10% fragments of sandstone as above, and some fragments of a grayish tan, micro-sucrosic dolomite.
- 10,940 - 60' Red, and some gray shale, about 20% fragments of fine to very fine grained, white and reddish, micaceous sandstone.
- 10,960 - 80' Red and some gray shale, and about 75% fragments of white, gray and reddish, fine to very fine grained, micaceous sandstone.
- 10,980 - 11,000' Like the preceding.
- 11,000 - 10' Mainly dark brownish red, micaceous shale, cavings(?) of various sandstone and other material.
- 11,010 - 20' Red shale, many fragments of gray shale. Some cavings.
- 11,020 - 30' Red, and gray shale, and a few fragments of sandstone.
- 11,030 - 40' Dark brownish red and dark gray, in part highly micaceous shale. A few fragments of sandstone.
- 11,040 - 50' Like the preceding. More fragments of sandstone, a few fragments of a brighter red shale. See #49 on slide 4.

11,050 - 60'

Red, and some gray shale as above. Some fragments of sandstone. A few fragments of light gray dolomite.

11,060 - 70'

Approx. top of  
(U. Trinity?)  
Limestone Unit.  
Mainly grayish.

Red shale, and some gray shale as above. A few fragments of micaceous siltstone and fine grained sandstone, also numerous fragments of a light to medium dark brownish gray, irregularly very finely dolomitic limestone, which contains many fragments of fossil bivalves and some other fragmental, micro- and macro-fossil debris. For limestone, see #44 - 47 on slide 4.

11,070 - 80'

Similar to preceding, with addition of more fragments of white, fine grained, micaceous sandstone.

11,080 - 90'

About 50% shale, and 50% sandstone as above, and many fragments of a light grayish tan, micro-sucrosic dolomite. Some fragments with traces of fragmental fossil material.

11,090 - 100'

Like the preceding. Some fragments of dolomitic limestone also sandy to silty and somewhat micaceous. Contains some carbonaceous material also. See #48 and 50-52 on slide 4.

11,100 - 10'

Shale, and some sandstone as above, also many fragments of a light tan, highly dark gray spotted, pseudo-oolitic limestone. Dark spots possibly in part oolites, but many are sections and fragments of molds of microfossils and finely broken macro-fossil material, a few fragments of anhydrite. See #53 - 56 on slide 4.

11,110 - 20'

Red shale as above, and about 50% fragments of the pseudo-oolitic, fossiliferous limestone as above. A few fragments of anhydrite. See #57 on slide 4.

11,120 - 30'

Similar to preceding. Less limestone, a few more fragments of anhydrite.

11,130 - 40'

About 50% red, and some gray shale, and 50% fragments of limestone. Limestone, in part like the preceding (possibly caving), and, in part a light brown, sucrosic, pseudo-oolitic dolomite, which contains abundant small, black, rounded nodules, which may represent fragments of micro-fossil molds, in part. See #58 and 59 on slide 4. (#60 on slide 4 is fossil that caved from higher limestone level.)

11,140 - 50'

Mainly red shale, and some micaceous sandstone, with some fragments of the coarsely and finely pseudo-oolitic limestone as above.

11,150 - 60'

Dark red, and some gray shale, and many fragments of white to light red, micaceous, fine grained sandstone and siltstone.



11,160 - 80'

Shale, and some sandstone as above, also fragments of a grayish tan, sucrosic dolomite irregularly streaked with dark gray shale and irregularly somewhat micaceous and finely sandy. Some fragments of the dolomite contain fragmentary fossil debris.

11,180 - 200'

*Dolo, PK - Gray  
PS 5000 - 5000*

Red, and some gray shale as above, also many fragments of a shaly tan dolomite, which is irregularly sandy and slightly micaceous and contains much comminuted fossil material. Fossil material in this limestone not clearly defined as in the oolitic limestone described from slightly higher depths. See #1 to 3 on slide 5.

11,200 - 20'

Sample about 50% red shale, and 50% fragments of several types of sandstone and of limestone like that described from slightly higher depths.

11,220 - 40'

Almost entirely dark brownish red, and gray, flaky, irregularly micaceous shale. A few fragments of sandstone and siltstone, an occasional fragment of limestone (probably caving.)

11,240 - 60'

Like the preceding.

11,260 - 80'

Like the preceding. Cavings common.

11,280 - 300'

Shale as above, and many fragments of a white, micaceous, fine to very fine grained sandstone.

11,300 - 20'

*US 8  
See on*

Shale and some sandstone as above, also numerous fragments of a light gray - dark gray mottled limestone containing much fragmental fossil material. See #4 to 7 on slide 5.

11,320 - 30'

Red shale, and some calcareous and micaceous sandstone. A little limestone.

11,330 - 40'

Red and dark gray shale, and many fragments of gray limestone with much poorly defined fragmentary fossil material, some shaly streaks.

11,340 - 50'

*Antigor  
7*

Like the preceding. A trace of anhydrite. See #7 on slide 5.

11,350 - 60'

Shale as above, and many fragments of light to dark brownish gray mottled, soft to hard, and crypto-crystalline limestone, with poorly defined traces of fragmental fossil material common in many of the limestone fragments.

11,360 - 70'

*V PK - Brown  
M. 2000  
② POSS 1000  
OSTHACCO*

Red and gray shale. Some fragments of sandstone, and a few fragments of limestone. Some small Miliolids, a fragment of Echinoid spine noted in some limestone fragments. (See #8 on slide 5.)

11,300 - 70'

Red and gray shale, and some fragments of limestone like that in preceding sample.

11,390 - 400'

Red, and dark gray shale, and many fragments of a white, micaceous, fine to very fine grained sandstone. A few fragments of limestone as above.

11,400 - 10'

Red shale, and dark gray shale as above, some fragments of micaceous sandstone and of fossiliferous, gray limestone.

11,410 - 20'

Shale as above, some fragments of sandstone, and many fragments of light to dark brownish gray, fossiliferous limestone (fragments of shell and poorly preserved and fragmental molds).

11,420 - 30'

Shale as above, and some fragments of limestone, in part, dark gray spotted, pseudo-oolitic. Some fragments of anhydrite. A trace of glauconite in the limestone. See #9 and 10 on slide 5.

11,430 - 40'

Shale as above, many fragments of highly dark spotted, oolitic limestone, and of dark to light grayish brown, hard to soft, fossiliferous (fragments of fossils and fossil molds) limestone. Many fragments of anhydrite. Traces of small Miliolids as nuclei for some of the oolites. (See #11 on slide 5).

11,440 - 50'

Shale as above, oolitic and microfossiliferous (dark gray molds and mold fragments) limestone fragments fairly common. Trace of anhydrite. Trace of glauconite in limestone. For typical fragments of limestone, see #12 on slide 5.

11,450 - 60'

Dark brownish red and dark gray shale. Some fragments of limestone as above, a few fragments of sandstone and a few of anhydrite.

11,460 - 80'

Shale as above, many fragments of fine to very fine grained, light gray, micaceous sandstone. A few fragments of limestone and of oolitic, sucrosic dolomite, and a few of anhydrite.

11,480 - 500'

Similar to preceding, but many fragments of fossiliferous and pseudo-oolitic limestone, some specimens of Quinqueloculina (Trinity type) in the limestone. See #13 and 14 on slide 5.

11,500 - 20'

Shale as above, and many fragments of limestone, in part, highly oolitic. Some fragments of anhydrite.

11,520 - 40'

Shale as above, little limestone, more anhydrite.

11,540 - 60'

Shale as above, and many fragments of light to dark brownish gray, hard and crypto-crystalline to soft and cream colored limestone, in part highly oolitic. Some Miliolids in the

oolitic  
US  
to pink ANNY

BEAUTIFUL  
oolitic

V DK only  
US @ 11205  
B-ROSEN  
11205

Miliolids  
US OR more

sandstone. Some fragments of limestone as in preceding sample. A trace of anhydrite.

- 11,580 - 600' Mainly dark gray and dull dark red shale - dark gray about 50%.
- 11,600 - 20' Like the preceding.
- 11,620 - 40' Shale as above, and many fragments of a hard, generally crypto-crystalline, dark grayish brown limestone. For this limestone, see #15 and 16 on slide 5.
- 11,640 - 60' Like the preceding. Limestone fragments very common.
- 11,660 - 80' No change.
- 11,680 - 700' Shale and limestone as above. Many fragments of anhydrite.  
Approx. top  
Thick Anhydrite  
Unit. Ferry Lake. 11950' E.B.
- 11,700 - 20' Shale as above, also many fragments of anhydrite and of a highly dark spotted, oolitic and fossiliferous limestone. Small Miliolids in some of the oolites. See #17 to 21 on slide 5.
- 11,720 - 40' Anhydrite about 75% of sample. Remainder dark gray and some red shale. A little limestone like that above.
- 11,740 - 60' Mainly dark gray shale, a little red shale, some oolitic limestone, and many fragments of anhydrite.
- 11,760 - 80' Shale as above, and many fragments of hard, dark brown and anhydritic limestone. Small Miliolids fairly common in some fragments of the limestone, some Ostracods and fragments of other fossils present. See #22 - 24 on slide 5. Some anhydrite in sample.
- 11,780 - 800' Anhydrite about 50% of sample. Remainder mainly dark gray shale, and many fragments of limestone like that in preceding sample.
- 11,800 - 20' Sample about 90% anhydrite. Remainder dark gray shale, and a few fragments of red shale.
- 11,820 - 40' About 75% anhydrite, 25% dark gray and a little red shale, some limestone as above.

- 11,840 - 60' Dark gray shale, a little red shale, about 25% anhydrite and many fragments of hard, dark brownish gray and light mottled limestone, small Miliolids fairly common in the limestone.

11,860 - 80' Sample composed mainly of a dark brownish gray, oolitic and highly fossiliferous (fragmental material) limestone. Some anhydrite and a little shale. Miliolids and specimens of the Polymorphinidae fairly common in some fragments of the hard limestone. Some anhydrite and some shale in sample.

11,860 - 70' Like the preceding. More anhydrite.

✓ *Sample  
Cult 205*  
11,870 - 80' Some dark gray shale, and abundant fragments of an oolitic and fossiliferous limestone. For examples, see #30 to 32 on slide 5.

11,880 - 90' Like the preceding. A little anhydrite.

11,890 - 900' Mainly fragments of oolitic and highly fossiliferous (fragmental material and molds) limestone as above. A few fragments with blebs of anhydrite.

*LG Miliolids  
P. oolites  
for Miliolids  
Miliolids*  
11,900 - 10' Fragments of a dark brownish gray, anhydritic and highly oolitic and fossiliferous (fragments of molds) limestone as above. A little dark gray and dull red shale. For limestone, see #33 - 36 on slide 5. Quinqueloculina and other Miliolids present in the limestone.

11,910 - 20' Limestone as in preceding sample. A little gray shale.

11,920 - 30' Dark gray and brownish gray, shaly limestone, with some pseudo-oolitic areas and much poorly defined fragmental fossil material.

11,930 - 40' Sample about 75% anhydrite, 25% dark brownish gray, oolitic and fossiliferous limestone like that above, and a little dark gray shale.

11,940 - 60' Sample mainly anhydrite, a little red and dark gray shale. A few fragments of limestone like that above.

11,960 - 80' About 50% anhydrite, and 50% dark gray shale and gray, pseudo-oolitic and fossiliferous limestone like that above. Some fragments of shale, and limestone with attached fragments of anhydrite.

*Red  
B. 1000*  
11,980 - 12,000' About 25% anhydrite, 75% mainly dark gray and many fragments of dark red, finely and, in part, highly micaceous shale, and dark gray, pseudo-oolitic limestone. Some fragments of several types of very fine grained, micaceous sandstone (possibly caving.) For shale, see #37 and 38 on slide 5.  
Approx. base  
Thick Anhydrite  
Unit.

*0.4% B.*  
12,000 - 20' Mainly gray shale, and some limestone as above, a little red shale, and trace of anhydrite. Cavings of sandstone and some other materials from higher depths.  
Rodessa.

- 12,040 - 60' Many fragments of red, and some gray shale, a fragment of light gray and reddish, fine grained, micaceous sandstone. A few fragments of limestone like that above.
- 12,060 - 80' <sup>L. Anhyd.</sup> Gray and red shale fragments, a small amount of limestone (probably caving), about 25% anhydrite.
- 12,080 - 100' Dark brownish red, and some dark gray, micaceous shale, about 10% anhydrite, some fragments of gray, micaceous, fine grained sandstone, a few fragments of limestone.
- 12,100 - 20' Mainly shale as above. A little sandstone, limestone, and anhydrite.
- 12,120 - 40' Shale as above, and many fragments of the mottled light and dark brownish gray, hard to soft limestone, which is irregularly oolitic and contains varying amounts of finely fragmental fossil debris. Some Miliolids and some specimens of Polymorphinidae in the limestone.
- 12,140 - 60' Shale, and some limestone as above, also many fragments of very fine grained, micaceous sandstone.
- 12,160 - 80' Gray, and dark red shale, many fragments of the gray, pseudo-oolitic limestone, and of several types of gray, micaceous sandstone. A few of the limestone fragments also somewhat silty to sandy.
- 12,180 - 200' Fragments of several types of light gray, micaceous, fine to very fine grained sandstone. Some fragments of limestone like that above, and some fragments of red and of gray shale.
- 12,200 - 10' Dark gray, and dark brownish red shale, and many fragments of very fine grained, micaceous sandstone. A few fragments of limestone like that above.
- 12,210 - 20' Like the preceding. A few fragments of anhydrite.
- 12,220 - 30' Gray, and dark red, micaceous shale as above, and many fragments of a grayish tan dolomite irregularly very finely sandy and containing a large amount of fine and finely broken fossil material. See #39 to 43 on slide 5.
- 12,230 - 40' Dark gray and dull dark red shale like that above, also many fragments of gray, micaceous, fine to very fine grained sandstone, and some sandy limestone like that above.
- 12,240 - 50' L Gray and red shale, some fragments of sandstone, and many fragments of gray, pseudo-oolitic and (fragmental) fossiliferous limestone.

*Dolomite  
is rare at  
Fossiliferous*

oolitic and bioclastic limestone. A small amount of sandstone. A trace of anhydrite. See #44 - 48 on slide 5. Limestone has scattered sand grains.

- 12,270 - 80' Shale as above (red and dark gray), and many fragments of the dark, and light gray, oolitic limestone as above.
- 12,280 - 90' Like the preceding.
- 12,290 - 300' Shale, and oolitic limestone as above, a little sandstone.
- 12,300 - 20' Gray, and some brownish red shale, many fragments of light gray, micaceous sandstone. Some fragments of highly sandy limestone, some limestone as above.
- 12,320 - 40' Gray, and some red shale, and many fragments of grayish brown, light and dark mottled, generally hard and crypto-crystalline limestone, with some traces of fossils and occasional finely sandy areas. A trace of anhydrite in sample. See #49 and 50 on slide 5.
- 12,340 - 60' Like the preceding.
- 12,360 - 80' Gray shale, a little red shale, and many fragments of limestone as above, some fragments of light gray, micaceous sandstone.
- 12,380 - 400' Like the preceding. Limestone is light and dark gray mottled and contains much finely broken fossil material and traces of microfossils. See #51 to 53 on slide 5.
- 12,400 - 20' Fragment of a light gray limestone, with abundant dark gray oolites and small fossil molds and mold fragments. Some dark gray and dull dark red shale, a trace of glauconite in the limestone.
- 12,420 - 40' Like the preceding. Some fragments of a very fine grained, micaceous, light greenish gray, calcareous sandstone.
- 12,440 - 60' Shale, and many fragments of limestone as at (12,400-20'). Also many fragments of a light gray, very fine grained, micaceous and fossiliferous, calcareous and slightly glauconitic sandstone. (Fossil material highly fragmentary). See #54 - 56 on slide 5.
- 12,460 - 80' Limestone as above, some gray and a little red shale, some fragments of sandstone.
- 12,480 - 500' Similar to preceding. Some fragments of the limestone pseudo-oolitic and a few irregularly sandy.