

**GEORGIA
STATE DIVISION OF CONSERVATION**

DEPARTMENT OF MINES, MINING AND GEOLOGY
GARLAND PEYTON, Director

**THE GEOLOGICAL SURVEY
Bulletin Number 74**

**LOGS OF SELECTED WELLS IN THE
COASTAL PLAINS OF GEORGIA**

by

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**ATLANTA
1964**

MITCHELL COUNTY

Operator: Stanolind Oil & Gas Co.	GGs. No. 109
Landowner: J. H. Pullen, Well 1	Elevation: 338 ft.
Location: Land District 10, Land Lot 133, 700 ft. south of north line, and 700 ft. west of east line of Land Lot 133	Total Depth: 7490 ft. Completed: Aug. 14, 1944

Summary of Stratigraphy

	Depth (feet)	Thickness (feet)
Tertiary		
In Eocene		
lower Beds of Wilcox age; 1st sample 1335 ft.		
Paleocene		
Clayton Limestone	1560	130
Cretaceous		
Gulf		
Beds of Navarro age	1690	220
Beds of Taylor age	1910	440
Beds of Austin age	2350	480
Atkinson Formation, upper member	2830	530
lower member	3360	280
Comanche undifferentiated	3640	2580
Triassic(?)		
		to
Upper Triassic(?)		
Newark(?) Group	6220 (?)	total 1270 depth

Lithologic and paleontologic description of cores and cuttings. Samples are cuttings unless otherwise stated.

Depth (feet)	Description
0-1335	Samples not studied.
Tertiary	
In Eocene	
Lower Eocene. Beds of Wilcox age.	

1335-1350	Limestone, white, chalky, underlies a sequence of glauconitic sand and gray glauconitic clay. The sample is probably in the Salt Mountain Limestone, the top of which is at about 1320 ft. as suggested by the electric log of the Pullen well. Specimens of
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Depth (feet)	Description
1350-1560	<i>Discocyclina weaveri</i> occur in the other samples of the limestone, although none were observed in this sample. Samples not described.

Paleocene

Clayton Limestone

1560-1575	The top of the Clayton Limestone is at about 1560 ft. on the basis of the electric log of the Pullen well. This sample contains the highest occurrence of white, hard, rough-textured limestone.
1575-1590	No samples.
1590-1605	Limestone, white, hard, chalky, and abundant fragments of grayish-brown chert. The sample contains a few specimens of <i>Anomalina alleni</i> .
1605-1620	Limestone, white, hard, chalky (composed of very small chalky fragments), and abundant fragments of chert. The sample contains some specimens of Foraminifera indicative of the Clayton Limestone. Same to:
1680-1695	Limestone, somewhat sandy (fine-grained sand) and slightly glauconitic; chert is abundant and seems to occur in streaks in the limestone. Specimens of <i>Anomalina vulgaris</i> var., <i>A. alleni</i> , and other forms typical of the Clayton Limestone are common in the sample. Beds of Midway age seem to overlie the Clayton Limestone, inasmuch as specimens of <i>Vaginulina robusta</i> occur in cavings in this sample.

Cretaceous

Gulf Series

Beds of Navarro age

	The top of the beds of Navarro age is placed at 1690 ft. on the basis of lithologic data and electric log characteristics. The highest occurrence of specimens of Foraminifera that definitely indicate the Cretaceous age of the beds is at 1800 ft. The highest occurrence of <i>Globotruncana arca</i> is in the sample at 1815-1830 ft.
1695-1710	Samples not described.
1710-1725	Clay, dark brownish-gray, marly, occurs in this sample and increases in abundance in the samples just below this depth.
1725-1845	Samples not described.
1845-1860	The microfauna in this sample contains specimens of species characteristic of the beds of Navarro age; <i>Pseudogumbelina costulata</i> , <i>Anomalina pseudopapillosa</i> , <i>Globotruncana cretacea</i> , <i>Pseudoclavulina clavata</i> .
1860-1870	Limestone, light-gray, hard, very finely glauconitic, sandy (fine-grained sand), occurs in this sample and in the sample at 1845-1860 ft. The microfauna is sparse and Navarro in character.

Depth (feet)	Description
1870-1905	No change.
Beds of Taylor age	
The top of the beds of Taylor age is placed at 1910 ft. on the basis of electric log characteristics.	
1905-1920	Materials like the sample at 1860-1870 ft. The sample contains one specimens of <i>Planulina dumblei</i> , many specimens of <i>Anomalinoidea pinguis</i> , and a few fragments <i>Bolivinoidea decorata</i> .
1920-1935	Like sample at 1905-1920 ft., with the addition of specimens of <i>Lituola taylorensis</i> (common).
1935-1950	Like sample at 1920-1935 ft., and some fragments of light-green bentonite.
1950-1965	Sandstone, gray, hard, fine-grained, calcareous; specimens of <i>Lituola taylorensis</i> are common.
1965-1980	Shale, gray, composes most of a very small sample. The sample contains some <i>Inoceramus</i> prisms and a few specimens of <i>Heterostomella americana</i> .
1980-1995	Like sample at 1965-1980 ft. Fragments of <i>Inoceramus</i> are common.
1995-2010	The microfauna in this sample contains specimens of species characteristic of the beds of Taylor age; <i>Planulina texana</i> , <i>Gyroldina umbilicata</i> , <i>Globorotalites conicus</i> , <i>Bolivina incrassata</i> ; <i>Bullimnella carseyae</i> .
2010-2025	No sample.
2025-2040	Sample is mainly cavings from higher levels. Some specimens of <i>Stensicina americana</i> are in the sample but these may have caved, as the species usually occurs at or near the top of the beds of Taylor age.
2040-2295	Samples not described.
2295-2310	Sandstone, extremely fine-grained, calcareous; micaceous, containing abundant fragments of <i>Inoceramus</i> , many nodules of pyrite, and some fragments of gray, micaceous marl. The microfauna is a mixture of specimens from several stratigraphic units but includes specimens of <i>Planulina taylorensis</i> and other Taylor species.
2310-2325	Like sample at 2295-2310 ft., but marly shale fragments are dominant in the relatively small sample. The microfauna contains species of Foraminifera that are characteristic of the beds of Taylor age.
2325-2370	Like sample at 2310-2325 ft.

Beds of Austin age

The top of the beds of Austin age is placed at 2350 ft. on the basis of electric log correlation.

Depth (feet)	Description
2370-2385	Similar to sample at 2310-2325 ft., but the material is somewhat harder, more calcareous, and leaves a larger, washed residue. The fauna is also similar to that in the samples below 2310 ft., but contains a few specimens of <i>Pseudoclavulina clavata</i> and <i>Heterostomella austiniana</i> .
2385-2400	Like samples at 2370-2385 ft., and containing <i>Globorotalites umbilicatus</i> and <i>Gaudryina austiniana</i> .
2400-2460	Samples not described.
2460-2475	Clay, dark-gray, soft, marly, containing specimens of <i>Pseudogaudryinella capitosa</i> , <i>Planulina dumblei</i> , <i>Globotruncana arca</i> , and <i>Globorotalites conicus</i> .
2475-2505	Samples not described.
2505-2520	Clay, dark-gray, soft, marly, containing specimens of <i>Globorotalites umbilicatus</i> .
2520-2580	Samples not described.
2580-2595	Sandstone, gray, extremely fine grained, glauconitic, calcareous, micaceous, and some fragments of gray, flaky, marly, micaceous shale. The sample contains many fragments of <i>Inoceramus</i> and of <i>Ostrea</i> sp. The microfauna is largely a mixture of specimens that caved from higher levels, but contains some specimens of species that are characteristic of the beds of Austin age.
2595-2610	Like sample at 2580-2595 ft.
2610-2685	No change.
2685-2700	Shale, brownish-gray, marly, a few fragments of gray, fine-grained sandstone, and many fragments of <i>Inoceramus</i> . The foraminiferal fauna is chiefly a mixture of specimens that caved from higher levels, but contains a few specimens of species that are characteristic of the beds of Austin age.
2700-2730	No change.
2730-2745	Like sample at 2685-2700 ft., with the addition of fragments of light-cream, hard, dense, sandy (fine-grained sand) limestone.
2745-2760	Like sample at 2730-2745 ft., but showing an increase in the amount of fragments of sandy limestone. The fauna is a mixture of specimens of Foraminifera from higher levels, including species characteristic of the beds of Austin age.
2760-2785	The sample is composed, mainly, of gray marly shale and a small amount of sandy limestone. The fauna is similar to that in the sample at 2745-2760 ft.
2785-2790	No sample.
2790-2805	Shale, gray, flaky, marly, and a few fragments of greenish-gray marly shale. The foraminiferal fauna is a mixture of specimens from various higher levels, but Austin forms, especially <i>Citharina texana</i> are very abundant.
2805-2830	No change, except that specimens of <i>Citharina texana</i> are much less abundant.

Depth (feet)	Description
Atkinson Formation. Upper Member.	
2830-2850	Shale, dominantly greenish-gray, and some gray shale. The shale contains small, brown, granular, irregular-shaped nodules of siderite. Specimens of <i>Pleurostomella watersi</i> and <i>Valvulineria infrequens</i> (Eagle Ford variety) are present. The samples from 2830 to 2895 ft. are characteristic of the deep-water marine facies of the upper member of the Atkinson Formation.
2850-2865	Sample not described.
2865-2880	Like sample at 2830-2850 ft.; contains specimens of <i>Gaudryina</i> cf. <i>G. bosquensis</i> .
2880-2895	Like sample at 2830-2850 ft.; contains in addition, specimens of <i>Ammobaculites</i> sp., characteristic of the Eagle Ford Shale in Texas.
2895-2900	Sandstone, quartz, light-gray to white, fine-grained, containing many fragments of <i>Ostrea</i> sp., and some fish bones, glauconite, and mica. The samples from 2895 to about 3360 ft. are characteristic of the shallow-water marine facies of the upper member of the Atkinson Formation. The depth of 2895 ft. is probably the top of the Tuscaloosa Formation of some geologists.
2900-2910	No sample.
2910-2925	Like sample at 2895-2900 ft., with the addition of fragments of flaky, smooth, green shale.
2925-2940	Shale, gray, flaky, fragments of green shale, fragments of <i>Ostrea</i> sp., and fragments of light-gray, micaceous, glauconitic sandstone which also contains phosphatic material and fish bones.
2924-2933	Core. Recovery? Sand, clear quartz, fine-grained, well-sorted, containing a little mica and some tan-gray flaky clay. The clay contains small fragments of carbonaceous material.
2933-2943	Core. Recovery? Top. Shale, bluish-green, thinly flaky, containing a few sandy and pyritic flakes, small fragments of brown and black carbonaceous material, a little mica, and a trace of blue-green glauconite. No specimens of Foraminifera were observed. Middle. Like top part of core. Bottom. Sandstone, light-greenish-gray, fine-grained, highly micaceous, containing inclusions of flaky green shale and small fragments of carbonaceous material that is highly pyritic in small scattered areas.
2940-2955	Shale, green, flaky and many cavings from higher levels.
2955-2970	Like sample at 2940-2955 ft., and many fragments of <i>Ostrea</i> sp. that are probably cavings.
2970-2985	Shale, flaky, many fragments of <i>Ostrea</i> sp., and fragments of white, fine-grained, well-sorted sandstone that contains a little light-green glauconite, mica, and a few fragments of <i>Ostrea</i> sp.

Depth (feet)	Description
2985-3060	No change.
3060-3075	Like sample at 2970-2985 ft. and in addition, many moderately large fragments of brown, fibrous, carbonaceous material.
3075-3120	No change.
3120-3135	Shale, flaky, and sandstone as described in the immediately preceding sample. The sample also contains fragments of oyster shells and large grains of quartz.
3135-3150	No sample.
3150-3160	Like sample at 3120-3135 ft., and also very coarse grains of quartz and some grains of pink feldspar.
3160-3210	No change.
3210-3225	Like sample at 3150-3160 ft., about 50 percent, and about 50 percent fragments of dark-brown carbonaceous material.
3225-3255	No change.
3255-3270	Shale, greenish-gray, and some bluish-green shale; a little coarse-grained sand and carbonaceous material like the sample at 3210-3225 ft.
3270-3315	Samples not described.
3315-3330	Like immediately preceding samples, but the shale is more micaceous and irregularly sandy (very fine grained sand). The only fossils seemed to be caving from beds of Austin age.
3330-3345	Like sample at 3315-3330 ft., and in addition, specimens of <i>Gümbelina</i> sp. that are characteristic of the upper member of the Atkinson Formation (Eagle Ford age).
3345-3375	Like sample at 3330-3345 ft.; also fragments of <i>Ostrea</i> sp. and of carbonaceous material, all of which may be caving.
Atkinson Formation. Lower Member.	
The top of the lower member of the Atkinson Formation is placed at 3360 ft. on the basis of electric log correlation.	
3375-3420	Samples not described.
3420-3435	The sample is composed of material similar to the immediately preceding samples, and, in addition, fragments of darker gray, flaky, unctuous shale that resembles the characteristic "marine shale" of the Tuscaloosa Formation.
3435-3465	Samples not described.
3465-3480	Shale, dark-gray, flaky, somewhat carbonaceous, is strongly dominant in the sample. Specimens of Foraminifera in the sample seem to be caving from much higher levels.
3480-3495	No sample.
3495-3510	Shale, grayish-green, flaky, slightly micaceous. The sample contains one specimen of <i>Trochammina rainwateri</i> which is characteristic of the lower member of the Atkinson Formation (Woodbine age). The base of the "marine shale" of the Tuscaloosa is

Depth (feet)	Description
	placed at 3500 ft. on the basis of electric log correlation.
3510-3525	Like sample at 3495-3510 ft., and, in addition the sample contains specimens of species of <i>Ammobaculites agrestis</i> that are characteristic of the lower member of the Atkinson Formation.
3525-3540	Sample is mainly shale, but contains, also, fragments of white, fine-grained, somewhat glauconitic sandstone.
3540-3570	No change.
3570-3585	Sample contains much gray flaky shale, and some coarse-grained sand. Many worn fragments of <i>Ostrea</i> sp. and other bivalves, with attached sand grains are also present. The shell fragments seem to be indigenous in beds near this depth; they are chalky, and grains of glauconite and phosphatic grains are attached to them.
3585-3615	Samples not described.
3615-3640	Shale, flaky, is the dominant material; siderite pellets, some glauconitic sandstone, and some shell fragments are also present.

Comanche Series undifferentiated

3640-3660	Shale fragments, like sample at 3615-3640 ft., some coarse-grained sand, and a few fragments of red, highly ferruginous clay.
3660-3675	No sample.
3675-3690	Like sample at 3640-3660 ft., and many small fragments of red and mustard-colored clay.
3690-3705	Clay, gray, that may be caving, and small fragments brick-red clay.
3705-3720	Sand, coarse, subangular, containing a few pink grains, a few greenish-yellow grains, and a few grains of feldspar.
3720-3810	No change.
3810-3825	Sand, coarse, like sample at 3705-3720 ft.; pink and yellow grains are more abundant.
3825-3870	No change.
3870-3885	Sand, coarse, like sample at 3810-3825 ft.; greenish-yellow grains very abundant.
3885-3960	No change.
3960-3975	Sand, like sample at 3870-3885 ft., and a fragment of mulberry-colored, somewhat micaceous clay-shale.
3975-4200	Samples are, mainly, sand like the preceding samples, and a few scattered fragments of gray, hard, dense, very fine-grained sandstone.
4200-4210	Sand, like the samples at 3975-4200 ft., and the highest occurrence of multicolored (gray, purplish-red, and mustard-colored), very finely and highly micaceous shale. The multicolored shale occurs in the upper part of the Comanche Series in many wells in the southeastern Gulf region.
4210-4250	Samples not described.

Depth (feet)	Description
4250-4251	Core. Recovery? Sand, quartz, very fine to moderately coarse, angular, and about 50 percent fragments of brown and green streaked ferruginous clay shale.
4251-4270	Samples not described.
4270-4285	Sand, fine to coarse-grained, and many fragments of gray and of brick-red streaked, finely micaceous, highly sandy (very fine grained sand) clay; also some fragments of raspberry-colored clay shale.
4278-4288	Core. Recovery? Top. Sand, pink-stained, fine-grained, moderately well sorted, and many flakes of colorless and colored mica. Middle. Sand, etched, fine-grained, moderately well sorted, about 10 percent pink grains, and a few grains of feldspar; gray mica flakes are abundant; brown, gray and green mica flakes are common. Bottom. Sand, fine-grained, and small fragments of dark brownish-red and yellowish-green, sandy, micaceous clay.
4288-4298	Core. Recovery? Top. Clay, highly sandy (very fine-grained sand), highly micaceous, highly ferruginous. Bottom. Washed sample. Sand, pink-stained, fine-grained, angular, well-sorted, and mica (mostly colorless).
4298-4308	Core. Recovery? Top. Sand, quartz, fine to coarse-grained, roughly angular; some greenish-yellow and some pink grains of feldspar; a little mica. Another part of core. Clay, red-brown, streaked with bluish-gray and yellowish-green areas, micaceous, highly sandy (very fine-grained sand).
4308-4318	Core. Recovery? Top. Sand, poorly sorted, very fine to very coarse grained; many greenish-yellow grains; some feldspar. Bottom. Sand, like top part of core but contains some mica.
4318-4328	Core. Recovery? Top. Sand, fine to very coarse grained; many greenish-yellow grains and some pink grains; feldspar common. Bottom. Clay, greenish-gray, highly sandy (very fine grained sand), highly micaceous. Much of the mica is dark (brown, gray and green), but some is colorless.
4328-4338	Core. Recovery? Top. Sand, fine to coarse-grained. Bottom. Clay, red, sandy (fine to moderately coarse grained).
4338-4348	Core. Recovery? Clay, tan, sandy (fine to coarse grained sand); many sand grains are etched.

Depth (feet)	Description
4348-4358	Core. Recovery? Clay, bluish-gray and yellowish-brown streaked, hard, sandy (very fine grained sand), highly micaceous.
4358-4368	Core. Recovery? Sand, fine to coarse-grained, roughly angular, somewhat micaceous.
4368-4378	Core. Recovery? Sand, fine to moderately coarse grained; many greenish-yellow grains and some feldspar; a little mica.
4378-4388	Core. Recovery? Top. Sand, mainly fine-grained and a few coarse grains; a little mica. Middle. Clay, brick-red, streaked with bluish-green areas; highly micaceous. Bottom. Clay, red, sandy, very highly micaceous. The flakes of mica are coarse, and green and brown flakes are common.
4388-4398	Core. Recovery? Bottom. Sand, mainly moderately fine grained, poorly sorted. Many sand grains are greenish-yellow and a few are pink. Both colorless and colored flakes of mica are present.
4398-4405	Sample not described.
4405-4420	Core. Recovery? Sand, coarse-grained; many greenish-yellow grains; a few grains of tourmaline (?); a little mica.
4405-4420	Sand, coarse-grained; many grains are greenish-yellow. The sample contains cavings of gray clay and varicolored micaceous clay.
4420-4440	No change.
4440-4450	Core. Recovery? Sand, fine to coarse-grained, green, brown, and gray flakes of mica are common, some of which seem to show transition to glauconite.
4450-4460	Core 23. Recovery 3½ ft. Top 1½ ft. Sand, quartz, fine to medium-grained, in a matrix of gray clay. Middle 1 ft. Like top part of core, but fine grains are strongly dominant. Bottom 1 ft. Sand, quartz, fine to coarse-grained, roughly angular, in a matrix of gray clay; medium grains are dominant.
4465-4480	Sand, quartz, fine to coarse-grained, roughly angular; coarse grains are dominant; a few grains are pink, a few are yellow. The sample contains a few fragments of dark-red and grayish-green mottled, micaceous shale.
4460-4470	Core 24. Recovery 7 ft. Sand, quartz, fine to coarse-grained (medium grains dominant) in a matrix of gray clay. The sample contains a few tinted

Depth (feet)	Description
	grains, and a few grains of feldspar.
4470-4480	Core 25. Recovery 3 ft. 2 in. Clay, red and greenish-gray, micaceous, highly silty, and gray, highly sandy (very fine-grained sand), micaceous clay.
4480-4490	Core 26. Recovery 4 ft. Top 2 ft. Shale, red and grayish-green, mottled. Bottom 2 ft. shale, red and grayish-green, mottled, unctuous.
4490-4500	Core 27. Recovery 1½ ft. Sand, quartz, light-gray, soft, fine to medium-grained, argillaceous; mica common.
4495-4510	Sand, quartz, coarse-grained; some feldspar. About 25 percent of the sample is red and green mottled shale.
4510-4525	Washed sample composed of coarse-grained sand, like sample at 4495-4510 ft., and a few fragments of red and grayish-green mottled shale.
4525-4555	No change.
4555-4570	Sand, like sample at 4510-4525 ft., and about 25 percent red and gray mottled, finely micaceous shale.
4570-4585	Sand and about 10 percent shale, like sample at 4555-4570 ft., some cavings.
4580-4590	Core 28. Recovery? Sand, quartz, fine to coarse-grained, in a matrix of soft white clay; medium grains are dominant; a few tinted grains, and a few grains of feldspar are present.
4585-4600	Washed sample; composed of fine to coarse-grained quartz sand and some feldspar; coarse grains are common. The sample contains many cavings of material from the Gulf Series.
4600-4615	Like sample at 4585-4600 ft., and in addition, a few fragments of red and gray mottled shale.
4615-4630	No change.
4630-4645	Like sample at 4600-4615 ft., and in addition, a few nodules of red-stained limestone.
4645-4660	Sand, quartz, fine to coarse-grained (coarse grains common); some sand grains are tinted yellow and some pink. The sample contains a few grains of feldspar and a few fragments of red and gray mottled shale.
4660-4690	No change.
4690-4705	Mainly sand, like sample at 4645-4660 ft., and a few fragments of red chert.
4705-4735	No change.
4735-4750	Sand, mainly coarse grains; a few tinted grains; a little feldspar. The sample contains a few fragments of gray, moderately hard, highly micaceous, silty clay.
4750-4765	Sand, like sample at 4735-4750 ft., and a few fragments of red shale.

Depth (feet)	Description
4765-4774	No change.
4774-4780	Core 29. Recovery 5½ ft. Top 5 ft. 3 in. Sand, quartz, fine to coarse-grained (fine to medium grains dominant), argillaceous, and some feldspar, in a matrix of white, bentonitic clay. Bottom 3 in. Clay, mottled red, gray, and mustard-colored, micaceous, somewhat sandy.
4780-4790	Core 30. Recovery 8 ft. Sand, light-gray, micaceous, fine to coarse-grained (medium grains dominant).
4795-4810	Sand, fine to coarse-grained (coarse grains dominant), mainly quartz and some feldspar. Some sand grains are tinted pink and some yellow.
4810-4890	No change.
4890-4900	Core 31. Recovery 3 ft. Sand, gray and red, soft, fine-grained, argillaceous.
4900-4915	Sample not described.
4915-4930	Sand, fine to coarse-grained, and about 10 percent fragments of dark purplish-red, gray-mottled, very finely micaceous shale.
4930-4987	No change.
4987-4989	Core 32. Recovery? Sand, clear quartz, etched, coarse-grained, in a matrix of soft white ashy clay.
4990-5005	Sand, fine to coarse-grained and about 25 percent fragments of red shale.
5005-5020	Sand, fine to coarse-grained. About 10 percent of the sample is composed of red shale. The sample contains many cavings.
5020-5035	Sand, about 50 percent of the sample; cavings about 50 percent; a little red shale.
5035-5050	No change.
5035-5050	No change.
5050-5065	Small washed sample composed of about 50 percent sand, and 50 percent red shale.
5065-5080	No change.
5080-5095	Mainly sand, about 50 percent coarse grains, and 50 percent fine grains.
5095-5110	Shale, red, about 75 percent; sand about 25 percent.
5110-5125	Sand, coarse and fine-grained in roughly equal amounts constitutes about 75 percent of the sample; about 25 percent of the sample is composed of red shale and a few nodules of limestone.
5125-5155	Sand, like the samples at 5110-5125 ft., and about 10 percent red shale.
5155-5170	Sand, like sample at 5110-5125 ft., a few nodules of limestone, and 50 to 75 percent dark-red, very finely micaceous shale.

Depth (feet)	Description
5170-5185	No change.
5185-5200	Sand, many nodules of limestone, some of which are red-stained, and about 10 percent red shale.
5200-5230	No change.
5230-5245	Sand, nodules of limestone, and about 25 percent dark-red shale, like the sample at 5185-5200 ft.
5245-5260	Sand, nodules of limestone, and about 5 percent red shale.
5260-5290	No change.
5290-5305	No change in materials, but red shale composes about 25 percent of the sample.
5305-5320	No change.
5320-5335	Sand, fine to coarse-grained, many nodules of limestone, some of which are red-stained; a little red shale.
5335-5350	Sample contains red shale, some nodules of limestone, and a little sand, like the immediately preceding samples; 50 to 75 percent of the sample is composed of cavings of materials from various levels in the Gulf Series.
5350-5625	No change.
5625-5650	Sand, fine to coarse-grained; nodules of limestone, and about 25 percent dark-red, finely micaceous shale, and some grayish-green, slightly red-mottled, micaceous shale.
5650-5665	Mainly cavings.
5665-5680	Sand, nodules of limestone, a little red shale, and abundant cavings.
5680-5695	Sand, many nodules of limestone, a little red shale, abundant cavings.
5695-5710	No change.
5710-5725	Shale, dark-red, finely micaceous, is about 50 percent of the sample; 50 percent is composed of a little sand, many nodules of limestone, and abundant cavings.
5725-5740	Like sample at 5710-5725 ft., but the red shale is about 25 percent of the sample.
5740-5830	No change.
5830-5845	Shale, dark-red, micaceous, is about 50 percent of the sample; 50 percent is composed of a little sand, many nodules of limestone, and abundant cavings. Many of the limestone nodules are sandy.
5845-5890	No change.
5890-5905	The indigenous material seems to be a conglomerate composed of pebbles of varicolored quartzite, but amber is the most common color. The individual grain-size varies in different fragments of the quartzite. Other materials in the sample are sand, nodules of limestone, fragments of red shale, and cavings, all of which occur in the immediately preceding samples.
5905-5920	No change.
5920-5935	Mainly cavings and a little red shale.

Depth (feet)	Description
5935-5950	Like the sample at 5920-5935, with the addition of a few nodules of limestone.
5950-5965	Like the sample at 5935-5950, but with the addition of fragments of green shale, and an increase in the amount of limestone nodules. Some of the nodules are sandy.
5965-6025	No change.
6025-6040	Like the sample at 5950-5965 ft., with the addition of a few fragments of chert and a few fragments of quartzite.
6040-6130	No change.
6130-6145	Shale, red and green mottled; many nodules of limestone; a little sand (including a few fragments of green pebbles), a few coarse grains of chert, and a few of quartzite.
6145-6190	No change.
6190-6205	Shale, red and grayish-green mottled; some cavings.
6205-6220	Shale, red (in part bright-red), and some mottled red and grayish-green; many nodules of limestone; fragments of chert; fragments of quartzite; fragments of green slate(?), and other materials.

Triassic(?)

Upper Triassic (?) Newark (?) Group

6220-6250	Like sample at 6205-6220 ft., but bright-red shale is much more common.
6250-6295	No change.
6295-6310	Shale, bright-red, moderately hard; a little sand, nodules of limestone, and fragments of chert, like the sample at 6205-6220 ft. The red shale shows a little mottling of light grayish-green, and contains a few pebbles.
6310-6385	No change.
6385-6400	Shale, bright-red; slightly grayish-green mottled, and many fragments of light-pink to greenish-gray, fine-grained micaceous sandstone.
6400-6410	No sample.
6410-6415	Like sample at 6385-6400 ft.
6415-6430	Shale, like sample at 6385-6400 ft., a few nodules of limestone, and a few fragments of pebbles of various kinds of material.
6430-6510	No change.
6510-6525	Shale, bright-red with light-green mottling, like samples beginning about 6205-6220 ft. The shale contains irregular-shaped nodules of siderite (?) and a few fragments of chert.
6525-6540	Like sample at 6510-6525 ft., but siderite seems to be absent.
6540-6550	No change.
6550-6560	Shale, like sample at 6510-6525 ft., and many fragments of diabase, some of which is possibly weathered.

Depth (feet)	Description
6560-6570	Like sample at 6550-6560 ft. but contains less diabase.
6580-6640	No change.
6640-6650	Shale, red; much less diabase than in the samples beginning at 6550 ft.; many fragments of light-red, fine-grained, argillaceous sandstone.
6650-6660	Like sample at 6640-6650 ft., but contains less sandstone.
6660-6670	Shale, red, mottled with green areas; some diabase that is probably caving; very little sandstone; a few fragments of red chert.
6670-6680	No change.
6680-6690	Shale, red, mottled with light-green areas; a few fragments of chert pebbles; a few cavings of diabase. The shale is a somewhat duller shade of red than in the preceding samples.
6690-6780	No change.
6780-6790	Shale, and a few cavings of diabase; a few fragments of pink, moderately hard, fine-grained, argillaceous, micaceous sandstone.
6790-6800	No change.
6800-6810	Shale, like sample at 6780-6790 ft., and in addition, a few fragments of light pinkish-tan, fine to medium-grained sandstone containing colored grains of different kinds of materials that give the sandstone a finely speckled appearance.
6810-6820	No change.
6820-6830	Mainly shale; a few fragments of sandstone, like sample at 6800-6810 ft.; a few cavings of diabase.
6830-7030	No change.
7030-7040	Shale, red, somewhat green-mottled.
7040-7059	No change.
7059-7065	Core 33. Recovery? Top 2 ft. Shale, red. Middle do Bottom do
7065-7070	No sample.
7070-7080	Shale, red, somewhat green-mottled, and a few fragments of diabase.
7080-7100	Shale, red, and a few fragments of diabase.
7100-7110	Shale and about 25 percent diabase.
7110-7120	Shale and a little diabase.
7120-7130	Shale, and about 10 percent diabase.
7130-7140	Mainly red shale, and a little diabase.
7140-7230	No change.
7230-7240	Shale and a little diabase, like sample at 7130-7140 ft., with the addition of fragments of light-red, hard, fine-grained, micaceous sandstone.

Depth (feet)	Description
7240-7250	Like sample at 7230-7240 ft., but showing an increase in fragments of sandstone.
7250-7260	Shale, red; a little diabase; a few fragments of sandstone.
7260-7310	No change.
7310-7320	Shale, and some fragments of diabase like sample at 7250-7260 ft. A few fragments of shale contain small inclusions of limestone.
7320-7330	No sample.
7330-7340	Like sample at 7310-7320 ft.
7340-7350	Like sample at 7330-7340 ft., and many cavings.
7350-7360	Shale, red, and many fragments of black shale similar in texture to the red shale. The black coloring is due, possibly, to alteration by intrusions of diabase.
7360-7370	Similar to samples at 7350-7360 ft., but this sample contains less black shale and more diabase.
7370-7380	Shale, red, and 50 percent diabase.
7375-7377½	Core 34. Recovery 14 in.

Diabase.

7380-7390	Shale, red, and about 25 percent diabase.
7390-7400	Shale, red, and from 50 to 75 percent diabase.
7400-7410	No change.
7410-7420	Like sample at 7390-7400 ft., and in addition, a few fragments of splintery gray shale which may be indigenous in beds near this depth.
7420-7430	Shale, red, about 20 percent diabase, and a few fragments of gray to greenish-gray shale.
7423	Bit sample. Shale, red, and cavings.
7430-7440	Shale, red, about 50 percent diabase, and a few fragments of quartzite pebbles.
7440-7450	Shale, red, and about 75 percent diabase.
7450-7480	No change.
7483	Bit sample? Like the immediately preceding samples, with the addition of many fragments of pink, hard, dense, fine-grained, arkosic sandstone.
7480-7487	Like sample at 7483 ft., but this sample contains less sandstone.
7486-7489	Core 39. Recovery? Top 14 in. Unidentified black material. Bottom 5 in. Sandstone, pinkish-gray, dense, somewhat arkosic, very fine grained.
7489 - 7490:T.D.	No sample.