

Latitude

38 02 30

→ 0625
7.5' loc
to 2/16/1999
0.305
0.960

06 28

Longitude

Topo Location

7.5' Loc. _____ 15' Loc. 3.185
_____ (calc.) 0.960

Company _____

Farm _____

15' Quad Louisa SE
(sec.) _____

7.5' Quad Louise _____

District _____

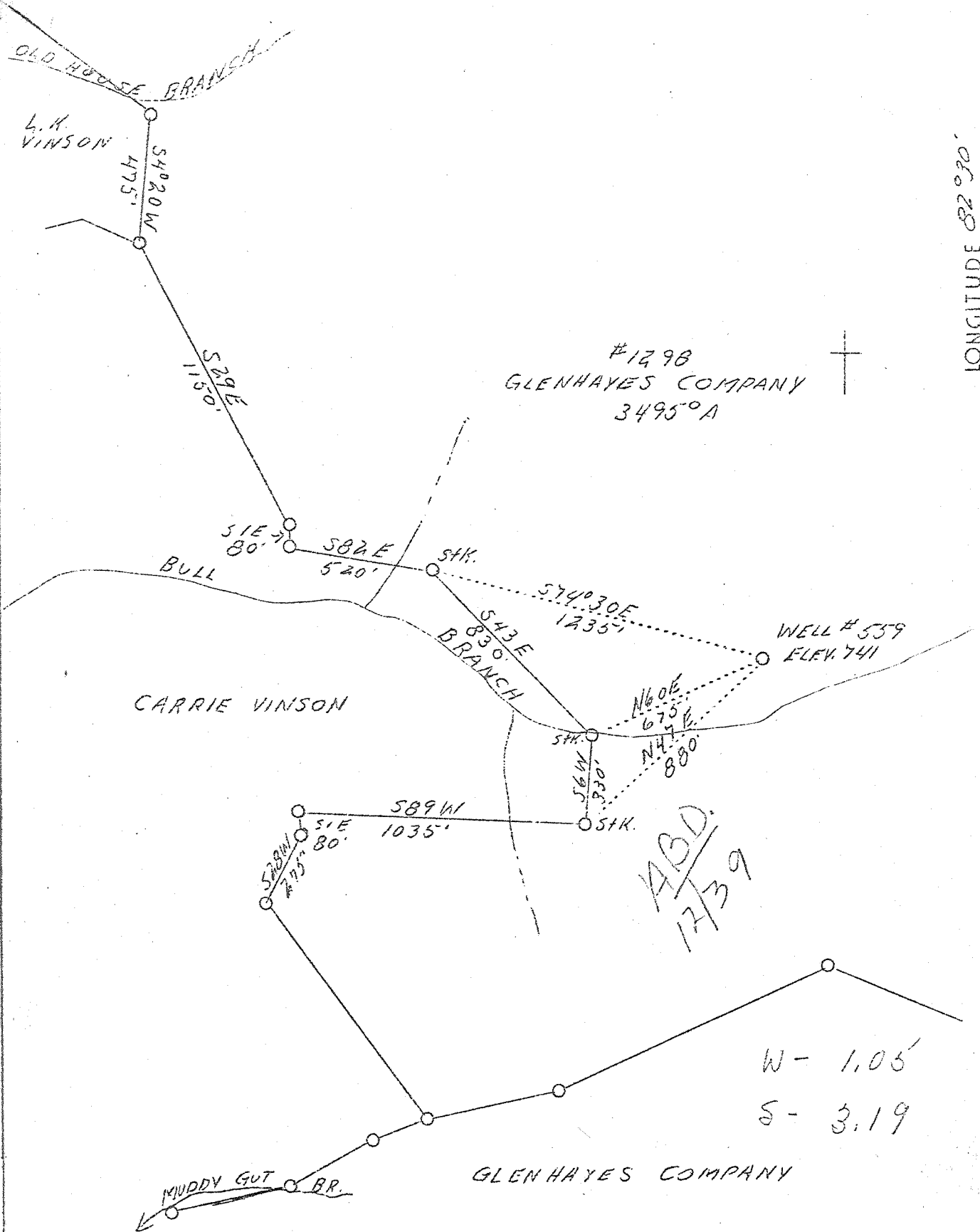
WELL LOCATION PLAT

County 099 Permit 162

DEEP WELL

LATITUDE 38° 05'

LONGITUDE 82° 30'



New location See Vol. VII, P 677

Company	Owens, Libby-Owens Gas Dept.
Address	Box 1375, Charleston, W.Va.
Farm	Glenhayes Company
Acres	3495
Lease No.	1298
Well (Farm) No.	3
Serial No.	559
Elevation (SL)	741.0
Quadrangle	Louisa <i>SE Louisa 75'</i>
County	Wayne
District	Lincoln
Engineer	T. S. Flournoy
Eng. Reg. No.	269
Date	July 28, 1939
Scale	1" = 500'

STATE OF WEST VIRGINIA
 Department of Mines
 OIL & GAS DIVISION
 Charleston

WELL LOCATION MAP

File No. Way-162

x Denotes location of well on U. S. Topographic Maps, scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown.

- Denotes "inc" places on border line of origin

(232)

1905-4045

DEED Well

GLENHAYES COMPANY NO. 3 (559) WELL.

Lincoln District, Wayne County, W. Va.
 By The Owens, Libbey-Owens Gas Department, Box 1375, Charleston, W. Va.
 Located 1.03 mi. W. of 82° 30' and 3.2 mi. S. of 38° 05' - SE - Louisa
 Quadrangle; on Bull Branch of Tug River, 1.5 mi. N. of Glenhayes.
 Elevation, 750' L.
 Permit Way-162.
 Drilling commenced Sept. 9, 1939; completed, Dec. 2, 1939.
 Dry hole. (15,000 cu. ft.)
 13" casing, 28'; 10", 399'; 8½", 1073'; all pulled.
 Coal was encountered at 132-135, 261-263, and 278-280'.

The section is based on the driller's record to a depth of 2338 feet, except for two short intervals which were sampled. Below 2338 feet it is based on nearly complete samples. According to the geologic map* of Wayne County

*Krebs, C. E., and Teets, D. D., Jr.; West Virginia Geological Survey; 1913.

the well starts at or very close to the top of the Pottsville, and about 660 feet below the Pittsburgh Coal horizon. The formation boundaries above where samples were available are perhaps not very accurately located. Shale cavings are believed to be present in most of the samples from a depth of about 3600 feet to the bottom, and may have decreased the accuracy of the sample descriptions. Record by Martens from sample examination July 27, 1940.

Top. Bottom. Thickness.

POTTSVILLE FORMATION, 968 FEET.

0	-	10	10	Surface, yellow, soft
10	-	20	10	Mud, blue, soft
20	-	27	7	Gravel, brown, soft
27	-	48	21	Mud, blue, soft
48	-	87	39	Slate and shells, dark, soft
87	-	132	45	Sand, white, soft (fresh water at 105', 2 bailers per hour)
132	-	135	3	Coal, black, soft
135	-	175	40	Sand, white, soft
175	-	215	40	Slate and shells, dark, soft
215	-	261	46	Slate, dark, soft
261	-	263	2	Coal, black, soft
263	-	278	15	Sand, dark, soft
278	-	280	2	Coal, black, soft
280	-	308	28	Slate, dark, soft
308	-	348	40	Sand, gray, soft
348	-	368	20	Slate, dark, soft
368	-	376	8	Sand, gray, soft
376	-	447	71	Slate, dark, soft
447	-	467	20	Sand, dark, soft
467	-	630	163	Slate, dark, soft
630	-	968	338	Salt Sand, white, soft (fresh water at 690', hole full)
MAUCH CHUNK GROUP, 86 FEET.				
968	-	974	6	Slate, dark, soft
974	-	996	22	Sand, gray, hard
996	-	1003	7	Slate, black, soft
1003	-	1010	7	Sand, dark, hard
1010	-	1023	13	Slate, light, soft
1023	-	1054	21	Lime, dark, hard

(OVER)

Top. Bottom. Thickness.

Top.	Bottom.	Thickness.	
			GREENBRIER LIMESTONE, 181 FEET.
1054	- 1235	181	Big Lime, white, hard
			POCONO FORMATION, 577 FEET.
1235	- 1286	51	Big Injun Sand, gray, soft
1286	- 1311	25	Shells, gray, hard
1311	- 1375	64	Slate and shells, dark, soft
1375	- 1395	20	Shells, dark, hard
1395	- 1518	123	Slate and shells, dark, soft
1518	- 1536	18	Shells, light, hard
1536	- 1745	209	Slate and shells, dark, soft
1745	- 1787	42	Slate, dark, soft
1787	- 1794	7	Shale, brown, soft
1794	- 1812	18	Berea Sand, white, hard (smell gas and show of oil at 1799')
			DEVONIAN SHALES, 1037 FEET.
1812	- 1818	6	Shell, gray, hard
1818	- 1824	6	Sand, dark, hard
1824	- 1848	24	Shell, dark, hard
1848	- 1867	39	Slate and shells, dark, soft
1867	- 1880	13	Shells, gray, hard
1880	- 1912	32	Slate and shells, black, soft
1912	- 1957	45	Shale, very dark gray to black (samples)
1957	- 2024	67	Slate and shells, dark, soft
2024	- 2087	63	Slate and shells, light, soft
2087	- 2109	22	Shell, dark, hard
2109	- 2148	39	Slate and shells, dark, soft
2148	- 2167	19	Shale, brown, soft
2167	- 2219	52	Sand shells, dark, hard
2219	- 2234	15	Slate and shells, dark, soft
2234	- 2256	22	Shale, very dark gray (samples)
2256	- 2319	63	Slate and shells, dark, soft
2319	- 2338	19	Shell, dark, hard
2338	- 2379	41	Shale, very dark gray (record based on samples from 2338' to total depth)
2379	- 2399	20	Shale, 50% very dark gray and 50% light
2399	- 2590	191	Shale, very dark gray to black; several samples have from 10 to 20% of lighter gray shale with small specks of pyrite; spore cases in dark shale from 2523 to 2590'
2590	- 2740	150	Shale, medium-gray to grayish-green, calcareous; up to 5% or more of limestone in some samples; some pyrite
2740	- 2749	9	Shale, 60% dark-gray, 40% much lighter and grayish-green
2749	- 2799	50	Shale, gray and green, calcareous; contains some pyrite
2799	- 2827	28	Shale, dark-gray to black, pyritic
2827	- 2843	16	Shale, dark-gray, with some green (probably cavings from above); considerable amount of fossiliferous but not cherty limestone; a few thin sandy streaks in the dark shale from 2835 to 2843'
2843	- 2849	6	Shale, black, pyritic, with many spore cases
			HELDERBERG LIMESTONE, 150 FEET.
2849	- 2891	42	Limestone, very light brown, cherty; some of chert is nearly white and translucent; contains a little dolomite; in the sample including the base of the black shale and the top of the cherty limestone there is a very little fine white sandstone, possibly representing the Oriskany

Top.	Bottom.	Thickness.	
2891	- 2908	17	Limestone, very light brown, cherty; has high proportion of light-gray translucent chert
2908	- 2935	27	Limestone, nearly white, cherty, slightly dolomitic at top and more so toward bottom; mostly contains a little silt or very fine sand
2935	- 2947	12	Limestone, nearly white, very sandy; contains large amount of medium to fine sand with rounded and frosted grains; small amount of chert
2947	- 2960	13	Limestone, brown, cherty, with some pyrite and a little glauconite
2960	- 2987	27	Siltstone, gray to brownish, very cherty, highly calcareous; contains considerable pyrite and glauconite and a little dolomite; most of this could as well be called impure limestone; fossil fragments in some samples
2987	- 2999	12	Limestone, gray, fossiliferous SALINA FORMATION, ETC., 561 FEET.
2999	- 3011	12	Limestone, brown, oolitic, slightly dolomitic; brown material in suspension after acid treatment
3011	- 3026	15	Limestone, brown, moderately dolomitic, very fine textured; contains traces of sand, chert, and glauconite; a little anhydrite from 3022 to 3026'
3026	- 3031	5	Limestone, light-brown, dolomitic (show gas, 3026-3038', 1,300 cu. ft.)
3031	- 3034	3	Dolomite, brown
3034	- 3052	18	No samples
3052	- 3066	14	Dolomite, brown, with about 10% of anhydrite
3066	- 3072	6	Dolomite, brown, with about 20% of white anhydrite (gas, 3072', 500 cu. ft.)
3072	- 3104	32	Dolomite, brown, very fine textured, with about 5 to 10% of white anhydrite
3104	- 3110	6	Anhydrite, white, 80%; brown dolomite, 20%
3110	- 3122	12	Dolomite, brown, with 15% of white anhydrite (gas, 3122', 450 cu. ft.; reduced hole)
3122	- 3152	30	Dolomite, brown, mostly very fine textured; contains a very little anhydrite and a few small specks of pyrite
3152	- 3245	93	Dolomite-anhydrite rock, brown, with some white; contains mostly about 30 to 50% of anhydrite, most of which is white and more coarsely crystalline than the dolomite
3245	- 3251	6	Dolomite, brown, with 10 or 15% of anhydrite
3251	- 3263	12	Dolomite-anhydrite rock, brown and white
3263	- 3316	53	Dolomite, brown, with small amount of anhydrite; a little gray and green shale from 3283 to 3290' and a little chert from 3306 to 3316'
3316	- 3329	13	Dolomite, brown; fine-textured but distinctly coarser and more crystalline in appearance than the dolomite above
3329	- 3379	50	Dolomite, brown; very fine textured from 3329 to 3339', coarser below 3339'; contains some small clear quartz crystals from 3329 to 3344'; a little green shale, 3329 to 3334' and 3344' to 3347'; variable but rather small amount of anhydrite in most samples
3379	- 3412	33	Dolomite, light-brown; mostly very fine textured but some appears distinctly crystalline under low-power binocular; contains 10 to 15% anhydrite from 3379 to 3397' and very little below 3397'

Top.	Bottom.	Thickness.	
3412	- 3417	5	Dolomite, brown, with small amount of gray and green shale
3417	- 3427	10	Dolomite, dark-brown, with a little anhydrite
3427	- 3437	10	Dolomite, dark-brown, shaly, with a little anhydrite; samples also contain small amount of gray to green shale and very fine dolomitic sandstone
3437	- 3496	59	Dolomite, dark-brown and gray; at least some parts of it seem to be oolitic with oolites mostly obscured by recrystallization; small amount of green shale from 3437 to 3460'
3496	- 3508	9	Limestone, dark-brown and dark-gray, distinctly oolitic, partly dolomitic (some of this limestone in last sample in interval above)
3508	- 3535	27	Dolomite, brown, finely crystalline; contains small amount of fine sand and a little anhydrite
3535	- 3550	15	Dolomite, brown, sandy; contains medium-grained sand with grains rounded and frosted
3550	- 3560	10	No sample; probably dolomite (gas, 3555')
CLINTON FORMATION, 400 FEET.			
3560	- 3582	22	Sandstone, light-gray to brown, fine, highly dolomitic (<u>Keefer Sandstone</u> ; gas, 3578', 9,000 cu. ft.)
3582	- 3595	13	Sandstone, white, very fine, dolomitic, 80%; gray silty shale, 20%
3593	- 3610	15	Shale, red, 60%; gray silty shale, 20%; light-gray, very fine sandstone, 20%
3610	- 3743	133	Shale, red, micaceous, partly silty
3743	- 3750	7	Shale, grayish-green, with nearly equal amount of red
3750	- 3774	24	Shale, grayish-green, with a little red
3774	- 3783	9	No sample; recorded as soft white shale
3783	- 3787	4	Shale, grayish-red, 80%; gray and green shale, 15%; light-gray siltstone or very fine sandstone with a little glauconite, 5%
3787	- 3802	15	Shale, grayish-red and grayish-green; with a little siltstone as above
3802	- 3808	6	Hematite, red, with white dolomite, 50%; green shale, 25%; red shale, 25%; probably no true oolites, but some of hematite is in rather flat rounded particles
3808	- 3814	6	Shale, grayish-red; small amounts of green shale, red hematite, and white dolomite
3814	- 3878	64	Shale, grayish-red, micaceous, partly silty
3878	- 3890	12	Shale, grayish-red, 75%; very fine nearly white dolomitic sandstone, 20%; green shale, 5%
3890	- 3892	2	Sandstone, light-gray, mostly very fine, highly dolomitic, 60%; red shale, 40%
3892	- 3894	2	Siltstone, light-gray to green, highly dolomitic, 70%; red shale, 30%; green shale, 5%; some of the fragments classed as siltstone are more dolomite than silt and some contain very fine sand
3894	- 3896	2	Shale, red, 60%; gray to greenish dolomitic siltstone and very fine sandstone, 25%; green shale, 15%; sample also contains some cement
3896	- 3910	14	Shale, grayish-red and grayish-green
3910	- 3916	6	Shale, green
3916	- 3924	8	Shale, green, 80%; hematite, fossil ore, 20%; there are many rounded particles of hematite, some of which may

(CONTINUED ON PAGE 5)

Top.	Bottom.	Thickness.	
			be oolites but for the most part they are considerably flattened or elongated and are probably worn fragments of fossils replaced by hematite
3924	- 3936	12	Shale, green
3936	- 3940	4	Shale, green, 60%; gray, silty, pyritic dolomite, 30%; small amounts of red shale, hematite, etc.
3940	- 3945	5	Shale, green, 60%; hematite (fossil ore), 20%; red and brown shale, 20%; the hematite itself is similar to the two zones above but white calcite associated with it shows that these fragments can not be cavings
3945	- 3950	5	Shale, gray to grayish-red, 60%; green shale, 30%; small amounts of hematite, siltstone, etc.
3950	- 3955	5	Shale, green, with small amounts of red shale, hematite, and calcite
3955	- 3960	5	Shale, green; small amount of fine sandstone ALBION SANDSTONE, ETC., 120 FEET.
3960	- 3973	13	Shale, gray, 40%; fine to very fine gray partly quartzitic sandstone, 30%; the rest probably cavings including mostly green and red shale
✓ 3973	- 3986	13	Sandstone, light-gray, very fine, slightly dolomitic, 70%; the rest various kinds of shale, probably cavings
3986	- 4001	15	Shale, gray, with small amount of sandstone as above
4001	- 4033	32	Shale, gray to grayish-green; with up to 20% or more of gray to greenish dolomitic siltstone and sandstone; fossil shell fragments in sample from 4001 to 4007'
4033	- 4066	33	Shale, grayish-green, 60 to 70%; highly calcareous and somewhat dolomitic light-gray siltstone, 30% or more; this contains small amount of glauconite and some fossils; a few fragments are so highly calcareous that they are really impure limestone
4066	- 4075	9	Siltstone, grayish-green, highly dolomitic; up to about 20% of shale, perhaps mostly cavings
4075	- 4080	5	Limestone, dark-gray, very silty, somewhat dolomitic, 60%; green, gray, and red shale, perhaps mostly cavings, 40%
4080	- 4100	20	QUEENSTON SHALE, 20+ FEET.
	4100		Siltstone, red, shaly
			Total depth

WEST VIRGINIA DEPARTMENT OF MINES
OIL AND GAS DIVISION

124

WELL RECORD

Permit No. Way-162

Oil or Gas Well Dry Hole
(Kind)

Company THE OWENS, LIBBEY-OWENS GAS DEPARTMENT
Address F. O. Box 1375, Charleston, W. Va.
Farm Glenhayes Company Acres 3495
Location (waters) Bull Branch of Tug River
Well No. 559 Elev. 750'
District Lincoln County Wayne
The surface of tract is owned in fee by Glenhayes Company
Address Glenhayes, W. Va.
Mineral rights are owned by Same
Address _____
Drilling commenced 9-9-1939
Drilling completed 12-2-1939
Date shot _____ Depth of shot _____
Open Flow 2 /10ths Water in _____ 1 Inch
_____ /10ths Merc. in _____ Inch
Volume 15,000 Cu. Ft.
Rock Pressure _____ lbs. _____ hrs.
Oil _____ bbls., 1st 24 hrs.
Fresh water 105 feet 690 feet
Salt water _____ feet _____ feet

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			Kind of Packer
16			
13	28'		
10	399'		Size of
8 1/4	1073'		
6 5/8			Depth set
5 3/16			
3			Perf. top
2			Perf. bottom
Liners Used			Perf. top
			Perf. bottom

CASING CEMENTED _____ SIZE _____ No. FT. _____ Date _____

COAL WAS ENCOUNTERED AT 132 FEET 36 INCHES
261 FEET 24 INCHES 278 FEET 24 INCHES
_____ FEET _____ INCHES _____ FEET _____ INCHES

Formation	Color	Hard or Soft	Top	Bottom	Oil Gas or Water	Depth Found	Remarks
Surface	yellow	soft	0	10			
Mud	blue	soft	10	20			
Gravel	brown	soft	20	27			
Mud	blue	soft	27	48			
Slate & Shells	dark	soft	48	87			
Sand	white	soft	87	132	Fresh Water	105'	2 bail per hr.
Coal	black	soft	132	135			
Sand	white	soft	135	175			
Slate & Shells	dark	soft	175	215			
Slate	dark	soft	215	261			
Coal	black	soft	261	263			
Sand	dark	soft	263	278			
Coal	black	soft	278	280			
Slate	dark	soft	280	308			
Sand	gray	soft	308	348			
Slate	dark	soft	348	368			
Sand	gray	soft	368	376			
Slate	dark	soft	376	447			
Sand	dark	soft	447	467			
Slate	dark	soft	467	630	Fresh water	690'	Hole full
Salt Sand	white	soft	630	968			
Slate	dark	soft	968	974			
Sand	gray	hard	974	996			
Slate	black	soft	996	1003			
Sand	dark	hard	1003	1010			
Slate	light	soft	1010	1023			
Lime	dark	hard	1023	1054			
Big Lime	white	hard	1054	1235			
Injun Sand	gray	soft	1235	1286			
Shells	gray	hard	1286	1311			
Slate & Shells	dark	soft	1311	1375			
Shells	dark	hard	1375	1395			
Slate & Shells	dark	soft	1395	1518			
Shells	light	hard	1518	1536			
Slate & Shells	dark	soft	1536	1745			
Slate	dark	soft	1745	1787			
Shale	brown	soft	1787	1794			
Serea Sand	white	hard	1794	1812	Smell Gas & Show of Oil	1799'	
Shell	gray	hard	1812	1818			

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth Found	Remarks
Sand	dark	hard	1818	1824			
Shells	dark	hard	1824	1848			
Slate & Shells	dark	soft	1848	1867			
Shells	gray	hard	1867	1880			
Slate & Shells	black	soft	1880	1912			
Shale	brown	soft	1912	1916			
Slate & Shells	dark	soft	1916	2024			
Slate & Shells	light	soft	2024	2087			
Shell	dark	hard	2087	2109			
Slate & Shells	dark	soft	2109	2148			
Shale	brown	soft	2148	2167			
Sand Shells	dark	hard	2167	2219			
Slate & Shells	dark	soft	2219	2234			
Shale	brown	soft	2234	2256			
Slate & Shells	dark	soft	2256	2319			
Shell	dark	hard	2319	2338			
Slate & Shells	dark	soft	2338	2353			
Shale	brown	soft	2353	2534			
Shells	dark	hard	2534	2559			
Shale	brown	soft	2559	2590			
Shell	dark	soft	2590	2609			
Slate	white	soft	2609	2619			
Shell	white	hard	2619	2634			
Shale	white	soft	2634	2799			
Brown Shale	dark	soft	2799	2821			
Lime	dark	hard	2821	2827			
Shale	black	soft	2827	2849			
Corniferous	Lime gray	hard	2849	2954			
Lime	dark	hard	2954	2994			
Lime	light	hard	2994	3026			
Lime	dark	hard	3026	3059	Show Gas	3026-3038	1,300 CF
Lime	gray	hard	3059	3329	Gas	3072'	500 CF reduced
Lime	dark	hard	3329	3527	"	3122	450 CF hole
Lime	light	hard	3527	3565	"	3555'	24 MCF at 3225
Sand - Keefen	white	hard	3565	3594	"	3578'	9 "
Shells	gray	hard	3594	3600			
Red Rock	red	soft	3600	3618			
Slate & Shells	red	soft	3618	3639			
Shell	red	hard	3639	3647			
Red Rock	red	soft	3647	3750			
Shale	white	soft	3750	3802			
Red Rock	red	soft	3802	3824			
Slate & Shells	red	soft	3824	3842			
Red Rock	red	soft	3842	3881			
Shell	light	hard	3881	3894			
Shale	light	soft	3894	3912			
Red Rock	red	soft	3912	3927			
Shell	dark	hard	3927	3951			
Slate & shells	dark	soft	3951	3976			
Sand	white	hard	3976	3986			
Slate	dark	soft	3986	4004			
Shell	hard	gray	4004	4018			
Slate & Shells	gray	hard	4018	4033			
Slate & Shells	gray	soft	4033	4053			
Slate & Shells	light	soft	4053	4066			
Shells	dark	hard	4066	4085			
Red Rock	red	hard	4085	4100			
Total Depth				4100			

2849
750

Keefen

Date..... December 4th, 1939

APPROVED THE OWENS, LIBBEY-OWENS GAS DEPT., Owner

By..... *L. P. Fisher* Geologist
(Title)