

20-32-21W

AUG 6 1933

Watchorn Oil & Gas Co.
Morrison No. 1
SE NE NE Sec. 20-32S-21W.
Clark County - Kansas

Elev. 8112

Description by Hugh McClellan:
Samples at University of Kansas.

(Empire Co)

- | | | |
|------|------|--|
| 3373 | 3377 | Limestone, white and gray, sandy, argillaceous; shale, gray, micaceous, fine black flakes of vegetable debris, calcareous. |
| 3540 | 3550 | Lime, dense, white and slightly brownish; some gray, micaceous shale, probably cavings; fossils; fusulina cf. secalica. |
| 3550 | 3585 | Lime, dense, brownish to coarsely crystalline white; gray, micaceous shale cavings; fossils; fragment of coral; fusulina 8p. |
| | 3622 | Lime, white, dense to coarsely crystalline; slightly argillaceous; quartz, chert and pyrite about 2%. Fossils; ostracoda. |
| | 3629 | Lime, light brown, crystalline; fossils - fusulina - ostracoda |
| | 3639 | Lime, white, dense. |
| | 3635 | Dense white lime as above with about 50% gray, micaceous, calcareous, pyritic shale; carrying vegetable debris. |
| | 3653 | Shale as above with about 50% white lime, coarsely crystalline. |
| | 3720 | Lime, white, dense and finely crystalline. |
| 3740 | 3740 | White lime as above. |
| | 3748 | Lime, white, slightly brownish, porous. |
| | 3777 | Lime, dense, grayish white; fossils common; foraminifera, ostracoda. |
| | 3790 | Lime, white, dense, oolitic; a little pyrite. |
| | 3795 | Same as above but slightly argillaceous. |
| | 3810 | Lime, dense, white. |
| | 3814 | Dark gray, calcareous oolites in dense, white lime. |
| 3825 | 3825 | Lime, dense, white, slightly brownish. |
| | 3840 | Lime as above. |
| | 3866 | Lime as above. |

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	3876	Lime, dense, white, argillaceous, some gray shale.
	3920	Gray lime, finely crystalline, 60% gray, calcareous shale.
	3925	Lime, dense, white, finely oolitic.
	3973	Shale, dark gray, micaceous, calcareous; lime as above about 20%.
	3977	Shale as above; fossils; ostracoda.
4170	4175	Sandstone, white or light gray, fine, calcareous, micaceous, with thin black streaks of black, bituminous or vegetable matter.
4180	4250	4 samples - sand as above.
4250	4255	Shale, gray, micaceous, sandy.
4265		Shale, gray, micaceous, slightly calcareous.
	4268	Shale as above.
	4305	Shale, gray, micaceous; black, smooth; lime dense and coarsely crystalline, white and brown mottled.
	4345	Same as above.
	4385	Lime, dense, brown, fossiliferous; gray, calcareous shale cavings.
	4395	Lime, brown, coarsely crystalline.
4420	4428	Lime, dense, light brown, 10%; shale, gray, non-calcareous 90%.
	4425	Lime, dense, light brown; large amount of shale, gray and non-calcareous.
	4435	Same as above
4465	4465	Same as above
	4520	Lime, light brown, coarsely crystalline, carries considerable pyrite in finely crystalline masses.
4580	4585	Lime, white, crystalline, medium quartz grains about 30%; some gray micaceous shale top about 4583; considerable coal noted; fossils; Bryozoa.

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- 4588 Shale, hard, dark gray, micaceous, non-calcareous, a little white lime from above.
- 4596 Lime, light brown, dense and coarsely crystalline, porous.
- 4617 Lime, light brown, dense, cherty; silica about 80%, small white rods in the chert, may be sponge spicules.
- 4627 Lime, dense, light brown, in part chalky; chert, translucent about 10%.
- 4633 Same as above.
- 4640 Lime, light gray, finely crystalline; 50% shale, gray, laminated, slightly calcareous, probably cavings.
- 4645 Lime, dense, light brown, in part chalky; a few quartz grains noted.
- 4652 Lime, light tan, broken into coarse flakes.
- 4659 Lime, light and dark brown, about 50% siliceous.
- 4678 Lime, gray, slightly brownish, dense and finely crystalline.
- 4682 Lime as above.
- 4686 Lime as above; bluish chert about 5%.
- 4692 Same as above.
- 4705 Light gray lime, crystalline.
- 4710 Same as above.
- 4721 Lime, gray, finely crystalline; gray mottled chert 25%.
- 4725 Lime, white, dense.
- 4730 Lime, gray, dense.
- 4744 Lime, dense, gray, also 50% dense dark greenish gray lime.
- 4749 Clay, shale, dark greenish gray, slightly calcareous.
- 4761 Gray shale as above, dense white lime 50%
- 4767 Same as above.

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	4768	Lime, white, dense and finely crystalline, flaky.
	4778	Lime as above 50%; shale, dark greenish gray 50%.
	4800	Lime, white, finely crystalline, flaky.
	4806	Lime, dense, light brown; greenish gray, calcareous shale 30%.
	4809	Lime, dense white and light brown; clay shale, dark, greenish gray, carries some pyrite.
	4814	White lime, dense, chalky.
4822	4823	Lime, dense, white and light brown.
	4834	Same as above.
	4837	Same as above - chert 10%.
	4840	" " " 20% opaque, white.
	4844	" " "
	4846	Shale, gray, calcareous, carries a little pyrite finely disseminated and black vegetable debris.
	4854	Lime, dense, light and dark brown, oolitic.
	4872	Lime, white, finely crystalline, chalky.
	4880	Same as above
	4900	Same as above, dark greenish gray shale 50%.
	4910	Shale, black bituminous, highly micaceous, somewhat calcareous; no pyrite or conodonts found.
4949	4954	Lime, chalky white and light gray, dense and finely crystalline; bluish chert about 2%; shale about 30% gray and micaceous.
4954	4960	Same as above.
4960	4970	Limestone, dense, light brown, chert about 2%; shale 60%.
4970	4977	Shale, gray, micaceous, calcareous, carries black flakes of vegetable debris; shale, black smooth, micaceous, bituminous, non-calcareous, 75% of sample.

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4977	4983	Shale, gray, micaceous, much vegetable debris; lime, dense, light brown 25%; a little chert, bluish and opaque.
4997	5004	Shale, hard, light gray, micaceous, fine, non-calcareous.
5017	5020	Shale, smooth, dark brownish gray, much vegetable matter and pyrite, many fine spines or spicules replaced by pyrite; lime, white, finely crystalline 25%.
5024	5030	Lime, dense, light brown, chert 5%.
5030	5040	Lime as above 30%; shale, light gray, micaceous 60%; shale, black or dark gray 10%.
5040	5068	Lime, irregularly oolitic, dense white and light brown; shale, dark gray, non-calcareous 20%.
5068	5074	Lime as above 10%; light and dark gray, calcareous shale clay shale 90%.
5074	5093	Same as above - lime 50%.
5093	5102	Lime, clean white, dense and finely crystalline; bluish white, translucent chert 20%; black and gray, non-calcareous shale 20%.
5102	5120	Same as above.
5125	5131	Shale, light gray, highly calcareous; white and brown dense lime 5%; some pyrite in large crystals.
5131	5137	Lime, white, dense, about 25% siliceous, opaque.
5137	5147	Lime as above, chert about 25%; seems to show sections of fusulina.
5147	5150	Same as above.
5150	5154	Lime, dense, dark brown, argillaceous; some dark brown shale; white lime and chert about 25%.
5154	5156	Same as above.
5156	5158	" " "
5158	5160	" " "
5160	5164	Lime, white, slightly brownish, flaky, dense and finely crystalline; black, dense, bituminous shale, 10%.

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5164	5171	Shale, dense, black, bituminous, non-calcareous.
5173	5177	Shale as above 90%; 10% light gray shale, top about 5176
5177	5178	Light gray, clay shale, calcareous; some black shale as above.
5178	5183	Lime, dense, white, 30%; shale, gray and black as above 70%.
5183	5210	Lime, finely crystalline, light brown; black and gray shale 50%.
5210	5211	Chert, light brown, translucent; lime, light brown, dense, 10%.
5211	5218	Lime, light brown, dense; chert 10%.
5218	5228	Lime, white, finely crystalline 60%; black, bituminous shale and coal 40%.
5228	5235	Shale, black, bituminous; white lime 10%, some coal.
5235	5237	Same as above.
5237	5244	Same as above; a little light gray clay shale.
5244	5245	Lime, light brown, finely crystalline, argillaceous; gray, micaceous shale 30%.
5246	5248	Same as above.
5248	5250	Same as above.
5261	5265	Shale, dark brown, highly calcareous.
5265	5281	Lime, light and dark brown, dense, in part argillaceous.
5281	5282	Clay shale, white and light gray, slakes in acid; 20% black bituminous shale, non-calcareous.
5282	5294	Same as above with about 20% white, flaky limestone.

Interpretations:

All the above samples seem almost certainly Pennsylvanian in age.

OK Clark

J. Morrison #1 Clark Co.
Watchorn Oil Co.

- 3540-50 Red and gray shale and little gray, argillaceous limestone
- 3550-85 Gray shale and some gray limestone (fragment of *Fusulina*)
- 3622 Fossiliferous gray limestone and little brown chert, some dark gray shale + pyrite.
- 3629 Gray to brown limestone + some gray shale + little pyrite
- 3634 Very light gray limestone + little gray shale (very few fossils)
- 3639 Light yellow gray limestone (very few fossils)
- 3645 Dark gray shale + little light gray limestone
- do - more limestone, with many fragments of crinoids
- 3685 Light yellow brown calcareous limestone.
- 3720 do - very fine cuttings, and dark gray shale.
- 3740 Light cream color, pure limestone, slightly oolitic.
- 3748 do
- 3777 Gray limestone - a small *Fusulina* proving it still Perm.
- 3790 Light cream color, pure limestone, distinctly oolitic and some gray shale with little pyrite.
3795. Similar oolitic limestone with less shale.

Without cuttings from this general region for comparison correlation is doubtful, but the lowest part of the well is still in the Pennsylvanian and possibly at about the Lansing-Kansas City Horizon.

/ Is there a log of this well (?)

June 21, 1924

Wichita Oil Company
Tulsa, Oklahoma

Gentlemen:

I may advise as per the following notations, concerning microscopic examination of cuttings from your J. Harrison #1 in Clare County, Kansas.

3540-50	Red and gray shale and little gray argillaceous limestone.
3550-85	Gray shale and some gray limestone (fragment of <i>Favosites</i>).
3622	Fossiliferous gray limestone and little brown chert, some dark gray shale and pyrite.
3629	Gray to brown limestone and some gray shale and little pyrite.
3634	Very light gray limestone and little gray shale (very few fossils).
3639	Light yellow gray limestone (very few fossils).
3645	Dark gray shale and little light gray limestone.
	do. - more limestone with many fragments of crinoids.
3683	Light yellow brown calcarenite limestone.
3728	do. - very fine cuttings, and dark gray shale.
3740	Light cream color, pure limestone slightly oolitic.
3748	do.
3777	Gray limestone - A small <i>Favosites</i> proving it still Permian.
3790	Light cream color, pure limestone, distinctly oolitic and some gray shale with little pyrite.
3795	Similar oolitic limestone with less shale.

We should like to secure a complete record of this well as soon as available, and because of its important bearing on the underground geology in this part of the state, trust that we may continue to receive samples of the cuttings as they are penetrated.

Please call on us for any assistance which we can give you.

Yours truly,

B. M. Brinkette

State Geologist

July 29, 1924

Mr. J. R. Porter
 Hutchorn Oil and Gas Company
 Peabody, Kansas

Dear Sir:

I have examined with considerable care and much interest the last batch of cuttings from your Morrison well in Clark County - 4170 to 4255. Under the microscope the character of these cuttings appears as follows:

4170-4175 Dark bluish gray shale more or less calcareous and light greenish gray micaceous shale.
 4175-4180 Sand, calcareous fossiliferous light.
 4180-4200 Sand, calcareous, porous fine grained fossiliferous, light gray. Muscovite.
 4200-4225 Light sandy micaceous shale muscovite and biotite. Much fine quartz, dark bands with light. Productus spines and shell fragments.
 4225-4245 Fine sand with flakes muscovite.
 4245-4250 Fine calcareous sand flakes biotite and muscovite.
 4250-4255 Dark shale

From samples at 4175-4180 and 4180-4200 I have been able to pick out quite a number of very minute fossils which I am transmitting to a specialist of the U. S. Geological Survey for study. I may advise that the horizon now reached in this well appears pretty surely not to have reached the base of the Mississippian and the sand in the lower part of the well is not so deep as the Wilcox and other pay sands of the east. I am not able as yet positively to advise whether or not the rocks in the lower part of the well are even as low as the Mississippian but the fossils mentioned above should give some assistance in determination of this.

- I have looked carefully through all of our samples and have been unable to locate any cuttings from 3977-4170 and wonder if these were sent to the office. If they have been sent I will again endeavor to see if they have been misplaced here. We will be glad to have the driller's record whenever convenient, showing his interpretation of the drilling, together with records of water, etc.

Yours very truly,

State Geologist

RCY/AB

To

J R Porter

Walchorn oil & gas Co

Peabody, Kans

July 29, 1924

August 15, 1914

1924

Mr. J.R. Porter
~~Atchafalpa Oil & Gas Co.~~
Reedley, Kansas

Dear Sir:

I have been absent from the office a good deal recently in connection with geological work in the central and southern parts of the state. I have made a careful but hurried microscopic examination of cuttings from your deep well in Clark County and wish to report concerning a part of this examination as follows:

Sample of cuttings at 4266 is bluish shale lacking fossils
4268 is essentially similar to last sample but contains much fine muscovite, mica.
4303 is a dark blue shale with fragments of fine gray, sub-crystalline limestone.
4345 is a blue shale with considerable fine particles of pyrite and dense fine white limestone which is in part crystalline.
4385 is a dark gray limestone
4395 is a fossiliferous dark gray limestone, lithologically similar to last sample, but contains abundant crinoid stems and plate fragments, and ostracods, foraminifera and other material. Fossils selected from this and one or two other samples, I have forwarded to Mr. E. V. Roubey, specialist at the United States Geological Survey laboratories in Washington. As soon as he has been able to identify, and report on the identity of these minute fossils, we will have interesting information as to depth which has been reached in terms of the geological formations of this part of Kansas.
4425 very fine, creamy white limestone with fragments of dark shale.
4435 very fine grained, sub-crystalline limestone almost like marble, with fragments of reddish and bluish shale, probably caving, some coarse fragments.

2-

4455 fine grained, light gray crinoid limestone with a fragment of fossil shell. Cuttings are fine, granular.

From the succession and character of the formations, and the depth of this hole, I have been of the opinion that the well has very likely reached the Mississippian or perhaps even older rocks. The finding of fragments of fossil shells which are not known to range outside of the carboniferous indicate that the lowest fossil bearing limestones are not older than Mississippian, but I am omitting detailed advice with reference to identity of fossils selected from the cuttings before discussing more in detail the formations which are found here. The most interesting and important observation is that the Clark County region is very different from most of the other parts of the state, and the succession of limestones and position of shale bodies does not permit of identification of the formations with any confidence at all.

Yours truly,

State Geologist

RM/LB

Diet. but signed after Dr. Moore's departure from the office.

To:
J.R. Porter
Watchorn oil & Gas Co
Peabody, Kans.

20-325-21u

Result of Examination of cuttings in lower part of Hatchorn
Oil & Gas Company deep test in Blair County, Kansas.

By Raymond C. Moore, State Geologist.

- 4588 Very black shale, fragments look coaly, scattered grains limestone.
- 4596 Light gray limestone, crystalline calcite fragments, fine-grained, a little dark, fine shale, crinoid stem fragments.
- 4617 Gray dolomite, very hard, splintery, fracture, fine grained, dense.
- 4627 Limestone, light gray, dense, fine grained, efforvesces vigorously with acid, part crystalline calcite with well marked cleavage.
- 4633 Limestone magnesian to dolomite - does not efforvesce with acid, very fine large fragments. Also black fissile-slaty shale, ferruginous.
- 4640 Limestone, light to dark gray, fine grained, dense. Fragments of very smooth, rounded shell, not identifiable. (Look for fossils.)
- 4645 Light gray, granular, more or less crystalline limestone and pieces black, fissile shale, efforvesces with acid
- 4652 Light gray limestone, efforvesces vigorously in acid, dark shaly fragments.
- 4659 Limestone, light gray, fine grained fragments.
- 4678 Same with much fine white limestone and some black shale.
- 4682 Same, much chert.
- 4686 " " "
- 4692 Same.
- 4705 White fine to coarse crystalline limestone with much milky white chert and some clear quartz. Crinoid fragments.
- 4710 Same, but less chert.
- 4721 Same.
- 4725 Same.
- 4730 White, fine grained crinoidal limestone with a little chert and clear quartz. Productus spines, ostracods and abundant crinoid remains.
- 4744 White, fine grained limestone with some chert and crystalline calcite.
- 4749 Black limey shale with some gray limestone.
- 4761 White, fine grained limestone and black shale.
- 4767 Fine grained white and gray limestone with coarse crystalline calcite and crinoid fragments.
- 4768 Fine grained white limestone with some crystalline calcite and chert, a little pyrite, crinoid fragments.

- 4778 Dark gray and white fine to coarse limestone with coarse crystalline calcite.
- 4800 Dark gray and white fine grained limestone with coarse crystalline calcite with a little pyrite.
- 4806 Gray, fine grained limestone with coarse crystalline calcite.
- 4809 White limestone, fine grained and black shale, hard limey.
- 4814 White limestone, fine grained.
- 4822-23 White limestone, fine grained with some crystalline calcite and a little chert.
- 4834 White, fine grained limestone with coarse calcite, crystalline. Practically no chert. Crinoid fragments.
- 4837 White chert with a little limestone Contains fossil fragments but not studied
- 4840 White limestone, cherty - the chert rather abundant, white angular, resembles typical Mississippian from wells farther east, Ostracods and fossils.
- 4844 White limestone, fine to coarse crystalline, more or less cherty. Fossils, productus spines and ostracods.
- 4846 Bluish shale with some limestone.
- 4854 Gray oolitic limestone with minor amount of chert. Contains considerable coarse calcite. Abundantly fossiliferous with ostracods, especially Bairdia, several species and probably Foraminifera in oolite grains dominant. Also productus spines, Polypora sp., Fenestella sp., coral, Dielasma (?) (young complete specimen) Conocardium (?) sp., Endothyra ?, Crinoid fragments, Serpula ? or similar worm tube, brachiopod shell fragment with even low plications, small gastropods.
- 4872 Fine light gray limestone with chert fragments. Contains Productus spine, brachiopod shell fragments, and Foraminifera.
- 4880 Fine grained, light gray limestone, with fragments of clear quartz and milky chalcedonic chert, very sharply angular. Productus spines and fragments of brachiopod shell with ornamentation closely resembling Pustula. Crinoid fragments Endothyra?
- 4900 Brownish gray shaly limestone.
- 4910 Dense, black, fissile shale with flakes of mica ? showing on some laminae. Contains flakes of pyrite. One shell fragment - Productus spine? probably dropped in from above Chattanooga?

Examination of cuttings from Morrison 1
well Western Oil Co., Clark County, Mo.
col. d. by H. W. Bass
N. W. Bass

watchdog,
Morrison
20-325-21W
(1924)

- 4941-49 Very finely crystalline white limestone. A little gray black shale with some very fine mica. Very little pyrite and few grains crystalline quartz.
- 4949-54 Light and dark gray crystalline limestone and light and dark gray slightly micaceous shale. A little pyrite and chert. Fossils. Some fragments of limestone and shale contain fine stringers of a black vitreous substance with conchoidal fracture.
- 4954-60 White limestone, somewhat crystalline. Some dark gray slightly micaceous shale. Some of black substance listed above.
- 4960-70 Gray black shale and dark gray lime. in part cherty. Some of black substance listed above. Fossils.
- 4970-77 Black finely micaceous shale. Non-calcareous. A very little pyrite.
- 4977-83 Dark gray and black shale. Finely micaceous and dark gray cherty limestone. Some of the black substance described above in shale.
- 4983-88 Gray shale, non-calcareous, finely micaceous. Cream to white and clear finely crystalline limestone. Shale has some of black substance described above.
- 4988-97 Blue black finely micaceous shale and white limestone.
- 4997-5004 Light gray finely sandy shale and dark gray shale. Fossils
- 5004-12 Gray black shale and some dark gray chert. Little white lime.
- 5012-17 Very fine cuttings of cherty white lime and black shale.
- 5017-20 Black dense, hard slate-like shale. Some with fine pyrite fibers. Some white/cherty lime. Few stringers of black substance in shale. chert and
- 5024-30 Black finely micaceous shale and gray chert. Very fine cuttings.
- 5030-40 Light gray finely sandy shale and dark gray shale.
- 5040-68 Gray lime. Somewhat cherty and black shale.
- 5068-74 Black shale. Some gray chert.
- 5074-93 Black Shale. Some white cherty limestone.
- 5093-5102 White limestone, cherty, and black shale.
- 5102-20 Gray cherty lime and gray shale.
- 5125-31 Gray ~~shale~~ calcareous shale.
- 5131-37 Light gray cherty and white limestone and gray shale.
- 5137-47 Same.

Morrison well cuttings, contd.

5147-50	Same. Very fine cuttings.
5150-54	Black shale. White chert and little lime. Very fine cuttings.
5154-56	Same.
5156-58	Same but predominance of chert.