FORMATION LOG

WENDELL JOHNS

Deep Rock #2 Early
NE SW SE, 32-9S-21W
Graham County, Kansas
Elevation: 2311 Derrick Floor

10-3/4" Surface Casing @ 280', 200 sacks, 2% gel
Spudded: 7/3/50

Note: All measurements are taken from the top of the rotary bushing which is two feet above the derrick floor.

Depth	Formation Description	Remarks
0 - 280	Clay	Drillers log - 0-3000'
280 - 1190	Sand, shale & shells	
1190 - 1640	Shale, sand & shells	
1640 - 1785	Shale & shells	
1785 - 1835	Anhydrite	Stone Corral
1835 - 2120	Shale, shells & limestone	
2120 - 2310	Shale & shells	
2130 - 2350	Broken limestone	
2350 - 2490	Shale & shells	
2490 - 2640	Limestone & shale	
2640 - 2915	Shale & limestone	
2915 - 3000	Shale	
3000 - 3015	Shale, gray & brown; trace gray, angular sand	Sample log starts 3000'
3015 - 3020	Limestone, light gray to buff, sub-crystalline, fossiliferous	
3020 - 3035	Shale & sand, as above	
3035 - 3047	Shale, as above, increase in green shale	
3047 - 3053	Limestone, light gray to brown, sub-crystalline to finely crystalline, very fossiliferous	
3053 - 3067	Shale as above; streaks dark gray, dense limestone	
3067 - 3078	Slight increase in limestone, tan to light gray-green, sub-crystalline	
3078 - 3084	Shale, as above	
3084 - 3092	Limestone, light gray & dark gray, mottled, finely crystalline, fossiliferous	
3092 - 3103	Sand, gray, green & red, medium angular, micaceous	
3103 - 3116	Shale, gray; streaks limestone, as above	
3116 - 3131	Sand, fine, gray	
3131 - 3149	Shale, gray & green	
3149 - 3165	Limestone, tan to gray, sub-crystalline to finely crystalline, fossiliferous, possibly oolitic	
3165 - 3183	Shale, gray	
3183 - 3200	Limestone, light tan to gray, finely crystalline to dense, many fusulina	
3200 - 3207	Limestone, light gray, dense	
3207 - 3222	Shale, dark gray	
3222 - 3244	Limestone, as above; streaks shale, green, gray & brown	
3244 - 3253	Sand, fine, light gray, silty, micaceous, calcareous	
3253 - 3269	Streaks limestone, tan, gray to dark gray, sub-crystalline to finely crystalline.	

(2) Formation Log: Deep Rock #2 Early

Depth	Formation Description	Remarks
3269 - 3274	Shale gray & brown	
3274 - 3277	Limestone, as above	
3277 - 3288	Shale, gray, green & brown	
3288 - 3290	Streak limestone	
3290 - 3297	Shale, as above	
3297 - 3300	Limestone, tan to light gray, finely crystalline, possibly oolitic	
3300 - 3304	Shale, gray & green	
3304 - 3309	Limestone, white, finely crystalline, possibly oolitic	Topeka
3309 - 3329	Limestone, gray to dark gray to dark brown, finely crystalline to dense	
3329 - 3334	Shale, brown, gray	
3334 - 3342	Limestone, tan, finely sucrose	Fair porosity, fair spotted stain, slight trace free oil, no odor
3342 - 3348	Limestone, dark gray, sub-crystalline	
3348 - 3349	Shale streak	
3349 - 3353	Limestone, as above	
3353 - 3361	Shale, gray & green; trace limestone, at bottom	
3361 - 3367	Limestone, tan, finely crystalline	Some porosity, possible trace stain
3367 - 3371	Shale, as above	
3371 - 3381	Limestone, tan to gray, crystalline to corasely crystalline	Some porosity, no show
3381 - 3386	Streaks green & brown shale	
3386 - 3401	Limestone, tan, finely crystalline	
3401 - 3405	Shale, as above	
3405 - 3408	Limestone, as above	
3408 - 3421	Shale, as above; limestone, as above	
3421 - 3424	Limestone, gray & brown, finely crystalline to sub-crystalline	
3424 - 3430	Limestone, light tan, finely crystalline to dense	Trace porosity, no show
3430 - 3439	Limestone, as above	No porosity
3439 - 3449	Limestone & streaks shale, green & brown	
3449 - 3462	Shale & limestone streaks, as above	
3462 - 3472	Limestone, white to light tan, finely crystalline to sub-crystalline, trace oolites; some gray, opaque chert	Some pinpoint porosity; no odor or stain.
3472 - 3480	Limestone, finely crystalline to dense, as above	
3480 - 3483	Shale, black	
3483 - 3486	Limestone, white to light tan, finely crystalline to sub-crystalline; some gray opaque chert	Some pinpoint porosity, no odor, trace dead oil & very slight trace free oil.
3486 - 3493	Limestone, as above, dense	
3493 - 3495	Limestone, finely crystalline, as above; some gray opaque chert	Trace porosity & stain
3495 - 3514	Limestone, tan, sub-crystalline to finely crystalline, chert gray, opaque	

(3) Formation Log: Deep Rock #2 Early

Depth	Formation Description	Remarks
3514 - 3517	Shale, gray-brown to black	Heebner
3517 - 3522	Limestone, gray dense	Leavenworth
3522 - 3536	Shale, green & brown; trace fine, gray, shaly sand	Snyderville
3536 - 3546	Limestone, light tan to white, crystalline; trace white, opaque chert.	Dodge. Trace porosity 3538-3540. Base Oread 3546
3546 - 3553	Shale, gray, green, silty, trace brown	Douglas
3553 - 3563	Limestone, light tan to white, finely crystalline to crystalline	Lansing, possibly porous, no show
3563 - 3581	Limestone, white to light tan, dense to sub-crystalline; chert, white, opaque, vitreous	
3581 - 3593	Shale, gray, gray-green, some brown	
3593 - 3594	Limestone streak	
3594 - 3598	Limestone, tan, sub-crystalline, oolitic	Slightly porous, slight odor & stain; possible trace free oil.
3598 - 3605	Limestone, white to light gray & tan, dense; chert, white, opaque	
3605 - 3608	Shale, gray, green & brown	
3608 - 3611	Limestone, white vuggy limestone	Trace dead oil
3611 - 3621	Limestone, gray, sub-crystalline to finely crystalline	
3621 - 3639	Shale, gray, green & brown with streaks tan, dense limestone	
3639 - 3645	Limestone, white to light tan, finely crystalline to crystalline, oolitic & oolicastic	Good porosity, fair stain, small odor, very little free oil.
3645 - 3648	Limestone, white to light tan, finely crystalline	
3648 - 3651	Shale, gray, green & brown	
3651 - 3677	Limestone, as above	
3677 - 3679	Shale, as above	
3679 - 3681	Limestone, dark gray to brown, some white with black inclusions, sub-crystalline to finely crystalline	
3681 - 3690	Shale, brown & gray	
3690 - 3692	Limestone, white to light tan, sub-crystalline; some white devitrified chert	Slight trace vugular porosity, slight trace stain, no odor or free oil
3692 - 3701	Limestone, tan, dense	
3701 - 3710	Shale, gray, green & brown; streak tan dense limestone	
3710 - 3740	Limestone, white to tan, dense	
3740 - 3747	Shale, as above	
3747 - 3749	Limestone, white, sub-crystalline to finely crystalline	Pinpoint & vugular porosity. Good stain, fair show dark heavy free oil
3749 - 3751	Limestone, tan, dense	
3751 - 3755	Limestone, white, sub-crystalline, as above	Porous, as above

(4) Formation Log: Deep Rock #2 Early

Depth	Formation Description	Remarks
3755 - 3765	Limestone, tan to gray, dense	
3765 - 3773	Shale, as above; streaks limestone	
3773 - 3784	Limestone, light gray, dense	Base K. C. 3784'
3784 - 3800	Shale, green, brown, vari-colored	Marmaton
3800 - 3853	Shale, as above; streaks limestone tan, finely crystalline to dense	
3853 - 3865	Chert, orange to gray, opaque, vitreous to devitrified	Conglomerate
3865 - 3874	Mostly brown shale, some green; trace chert, as above	
3874 - 3898	Mostly brown shale, increase in chert, as above, trace white vitreous, opaque chert, some red opaque chert	
3898 - 3908	Chert, red, jasperoid, some white & yellow opaque; brown shale	
3908 - 3912	Dolomite, tan to brown, finely crystalline; much white & tan oolitic chert	Arbuckle. Some vugular porosity, some heavy free oil, no oder, fair stain
3912 - 3923	Dolomite, brown, crystalline to gray, finely crystalline; some sand grains in dolomite; some light green, sandy shale; some pyrite & tripoli in dolomite. Some oolitic chert	Some stain 3913-18; very little stain below 3918'; trace porosity, no oder
3923	Total Depth	

Drill-stem Test #1 3334-70
Open 30 min. - fair blow throughout - Rec. 120' salt water, no oil, possible trace gas - BHP 950#

Drill-stem Test #2 3594-3600
Open 30 min. - very good blow - Rec. 680' salt water, no oil or gas - flowing pressure 280# - BHP 1140#

Drill-stem Test #3 3747-60
Open 30 min. - very slight blow for 10 mins. - Rec. 20' drilling mud, no oil, gas or water - BHP 0

Drill-stem Test #4 3908-13
Open 15 min. no blow - Rec. 12' mud, no oil, gas or water - Did not get BHP

Drill-stem Test #5 3913-23
Open 1 hour - good blow - Rec. 210' salt water
BHP 950#

Samples examined and log compiled by Wendell S. Johns