

FORMATION LOG

Home Stake #1 Zorn
 SW SE NW; 6-178-11W
 Barton County, Kansas
 Elevation: 1859 Kelly Bushing

8 5/8" Surface Casing: 500'
 5 1/2" Casing:
 Com: 12 -16-57
 Comp:

NOTE: All measurements are taken at the top of the kelly bushing.

<u>Depth</u>	<u>Formation Description</u>	<u>Remarks</u>
0 - 395	Shale and shells	Drillers log 0-2600
395 - 490	Hard sand and shale	
490 - 500	Shale and shells	
500 - 717	Red bed	
717 - 742	Anhydrite	Stone Corral - Electric log
742 - 950	Shale and shells	
950 - 1115	Shale and salt	
1115 - 1430	Shale and shells	
1430 - 1930	Limestone and shale	
1930 - 2055	Shale and limestone	
2055 - 2600	Limestone and shale	
2600 - 07	Shale, gray, silty, micaceous	Sample log 2600-T.D.
2607 - 30	Limestone, brown to gray, sub-crystalline to finely crystalline, fossiliferous, shaly	Top Topeka 2607
2630 - 42	Shale, dark gray to light green	
2642 - 77	Limestone, gray to brown, sub-crystalline to finely crystalline, very fossiliferous; streaks gray shale	
2677 - 88	Limestone, gray to buff, sub-crystalline, fossiliferous; some gray to tan, finely sucrose dolomite; possibly some porosity; streaks gray shale 2682-84	No show
2688 - 91	Limestone, as above, non-porous	
2691 - 93	Shale, gray	
2693 - 2701	Limestone, as above, some porosity	No show
2701 - 05	Shale, gray	
2705 - 09	Limestone, tan to brown, sub-crystalline; trace vugular porosity	No show
2709 - 18	Limestone, tan to gray, subcrystalline to dense	
2718 - 31	Limestone, cream to buff, finely crystalline, chalky; much gray to	

-2- Formation Log: Home Stake #1 Zorn.

<u>Depth</u>	<u>Formation Description</u>	<u>Remarks</u>
2731 - 2776	brown vitreous figured chert Mostly limestone, buff to tan, subcrystalline, earthy, fossiliferous, shaly; some brown figured chert	
2776 - 84	Shale, dark gray	
2784 - 90	Limestone, brown to tan, sub- crystalline, resinous	
2790 - 2801	Shale, dark gray to brown-black, lumpy	
2801 - 27	Limestone, tan to buff, sub- crystalline, clean; streaks poor vugular porosity; chert, tan to brown vitreous, figured	No show
2827 - 32	Shale, light to dark gray	
2832 - 42	Limestone, tan, dense	
2842 - 45	Shale, medium gray	
2845 - 63	Limestone, cream to buff, finely crystalline, chalky, crypto- oolitic; streaks spotted vugular porosity	No show
2863 - 85	Limestone tan, subcrystalline to dense; streaks gray to brown shale	
2885 - 96	Limestone, cream, very oolitic, chalky; trace pinpoint porosity	Very slight trace spotted stain
2896 - 2903	Limestone, tan, subcrystalline, fossiliferous; chert, brown, opaque figured	
2903 - 22	Limestone, cream to buff, chalky; spotted vugular porosity	No show
2922 - 28	Limestone, tan to buff, sub- crystalline, fossiliferous; streaks dark gray shale 2922-24	
2928 - 32	Shale, brown-black, carbonaceous	Heabner
2932 - 35	Limestone, blue-gray to brown- gray, subcrystalline	Leavenworth
2935 - 46	Shale, green to green-gray	Snyderville
2946 - 48	Limestone, cream to white, finely crystalline, slightly dolomitic	Top Toronto 2946
2948 - 52	Limestone, white to brown, sub- crystalline to finely sucrose; spotted vugular porosity	Good light stain, no free oil or odor
2952 - 57	Limestone, as above, non-porous	
2957 - 77	Shale, red-brown to gray-green	Top Douglas 2957
2977 - 89	Sand, fine, brown, well sorted, very shaly	Good light to dark stain, no free oil or odor

<u>Depth</u>	<u>Formation Description</u>	<u>Remarks</u>
2989 - 3027	Shale, gray, gray-green and brown; streaks fine gray siltstone	
3027 - 32	Limestone, light brown to gray-brown, subcrystalline to dense, fossiliferous	Top Brown Lime 3027
3032 - 38	Limestone, as above, shaly	
3038 - 44	Shale, brown to gray	
3044 - 47	Limestone, tan to buff, subcrystalline, fossiliferous	Top Lansing 3044
3047 - 51	Shale, brown to gray-green	
3051 - 52	Limestone, as above	
3052 - 54	Limestone, cream, subcrystalline; chalky, oolitic; fair oolitic porosity	Spotted good show free oil - trace odor; D.S.T. #1
3054 - 60	Limestone, tan to gray, subcrystalline to dense	
3060 - 66	Limestone, cream to tan, subcrystalline; spotted fair vugular porosity	Slight to fair spotted show free oil, fair odor
3066 - 3118	Limestone, blue-gray to tan, subcrystalline to dense; some very oolitic brown resinous limestone; streaks brown to gray shale	
3118 - 24	Limestone, tan to buff, subcrystalline, fair spotted vugular porosity, some very large vugs with internal calcite growths porous 3118-20 and 3121-24	Spotted slight to fair show free oil, no odor; D.S.T. #2
3124 - 36	Limestone, tan to gray, subcrystalline; some cream to white oolitic chert; much brown to gray-green shale	
3136 - 61	Limestone, buff to gray, subcrystalline to finely sucrose, oolitic; streaks very good oolitic porosity 3136-50 and 3154-61	No show
3161 - 75	Limestone, tan to brown, dense to subcrystalline, earthy	
3175 - 78	Limestone, tan to buff, finely sucrose; spotted vugular porosity	Trace spotted dark stain
3178 - 86	Shale, dark gray to brown-black	
3186 - 89	Limestone, buff, finely sucrose, oolitic	No show
3189 - 3214	Limestone, tan to buff, subcrystalline, crypto-fossiliferous; streaks gray to brown shale	

<u>Depth</u>	<u>Formation Description</u>	<u>Remarks</u>
3214 - 3217	Limestone, tan, subcrystalline, spotted vugular and fine fracture porosity	Slight to fair show free oil, trace odor
3217 - 23	Limestone, as above, non-porous	
3223 - 25	Limestone, tan to buff, sub-crystalline, very oolitic; poor inter-oolitic porosity	Trace odor and free oil
3225 - 52	Limestone, tan to gray, sub-crystalline to dense; streaks gray to gray-green shale	
3252 - 77	Limestone, tan to gray, sub-crystalline to dense; chert, gray, opaque, vitreous	
3277 - 82	Shale, gray-green to purple-maroon, some limestone as above	
3282 - 90	Limestone, tan to cream, sub-crystalline to dense	Base Kansas City 3290; Top Marmaton 3290
3290 - 94	Shale, gray-green, earthy	
3294 - 3300	Limestone, tan to reddish-pink, subcrystalline, fossiliferous; trace vugular porosity	Trace light stain, no free oil
3300 - 03	Shale, brick red to lavender; trace gray-green sandy shale; some large subrounded quartz pebbles; chert, citrine to white, vitreous to devitrified	Conglomerate
3303 - 04	Chert, white to milky, vitreous, oolitic, translucent to opaque, fresh	Top Arbuckle 3303
3304 - 07	Dolomite, yellow-gray, slightly weathered; mostly gray to buff finely crystalline, rhombohedral dolomite; few pieces gray, finely crystalline dolomite with porous edges	Trace free oil, no odor; D.S.T. #3
3307	Rotary Total Depth	

Drill Stem Test Data: The following drill stem tests were run on the #1 Zorn. Johnston Testers were used on all tests.

Lansing-Kansas City:

- (1) D.S.T. 3047-55; open 1 1/2 hours - small blow which died in 45 minutes; flushed tool at 60 minutes - very weak blow for 14 minutes.

Brill Stem Test Data Contd:

Lansing-Kansas City Contd:

Recovered 20' very slightly oil cut mud.
Initial Closed In Pressure: 90 p.s.i. (30 min.).
Initial Flow Pressure: 0
Final Flow Pressure: 20 p.s.i.
Final Closed In Pressure: 40 p.s.i. (30 min.).

(2) D.S.T. 3111-25; open 1 1/2 hours - fair blow throughout test.
Recovered 410' salt water - no oil or gas.
Initial Closed In Pressure: 1065 p.s.i. (30 min.).
Initial Flow Pressure: 0
Final Flow Pressure: 150 p.s.i.
Final Closed In Pressure: 1015 p.s.i. (30 min.).

Arbuckle:

(3) D.S.T. 3297-3307; open 45 minutes - weak blow which died in 7 minutes. Bypassed tool at 15 minutes, no blow. Bypassed tool at 20 minutes, few bubbles.
Recovered 8' mud.
Initial Closed In Pressure: 15 p.s.i. (30 min.).
Initial Flow Pressure: 0
Final Flow Pressure: 15 p.s.i.
Final Closed In Pressure: 15 p.s.i. (30 min.).

TIME LOG

Home Stake #1 Zorn
 SW SE NW; 6-17S-11W
 Barton County, Kansas
 Elevation: 1859 Kelly Bushing.

NOTE: All measurements are taken from the top of the kelly bushing.

<u>Depth</u>	<u>Time</u>	<u>Remarks</u>
2600 - 2610	2-2-2-2-3-3-2-6-8-5	Top Topeka 2607
2610 - 20	7-5-4-4-3-3-3-4-4-4	
2620 - 30	3-5-5-4-6-5-4-3-2-2	
2630 - 40	3-4-4-4-5-5-5-4-5-5	
2640 - 50	4-5-8-8-8-9-9-8-5-5	
2650 - 60	6-7-9-3-8-8-9-9-8-8	
2660 - 70	8-10-8-7-5-5-5-5-5-6	
2670 - 80	6-7-6-5-6-6-7-7-6-7	
2680 - 90	6-7-5-3-2-2-3-5-5-5	
2690 - 2700	5-5-5-6-6-6-6-6-6-6	
2700 - 10	5-4-2-3-4-5-6-6-5-6	
2710 - 20	7-6-6-8-8-7-6-5-4-4	
2720 - 30	4-2-2-2-3-6-4-8-8-10	
2730 - 40	8-5-4-5-5-6-5-5-5-4	Trip 2731; EMLV
2740 - 50	4-5-5-4-4-6-8-10-8-7	
2750 - 60	8-6-8-7-8-8-9-7-7-6	
2760 - 70	7-5-8-4-9-9-8-8-9-9	
2770 - 80	9-4-5-7-10-12-6-6-5-4	
2780 - 90	3-3-3-2-7-11-10-10-7-8	
2790 - 2800	4-5-4-4-3-3-2-2-2-2	
2800 - 10	3-9-6-5-7-7-7-8-9-8	
2810 - 20	7-8-5-9-7-9-11-10-11-10	
2820 - 30	10-6-10-10-11-11-7-3-4-4	
2830 - 40	5-5-10-10-11-10-11-10-11-12	
2840 - 50	9-9-7-5-7-11-12-7-8-10	
2850 - 60	8-7-11-8-10-10-8-7-9-9	
2860 - 70	10-7-5-9-9-9-7-9-9-7	
2870 - 80	8-9-11-6-7-6-6-7-7-7	
2880 - 90	6-6-6-6-7-7-6-5-5-5	
2890 - 2900	6-11-11-12-9-9-13-17-17-17	Trip 2899; SV2
2900 - 10	7-8-6-5-6-5-6-6-5-5	
2910 - 20	7-7-6-6-5-6-5-6-5-7	
2920 - 30	6-8-7-10-9-8-9-9-8-3	Top Haebner 2928
2930 - 40	2-2-6-9-11-7-6-6-4-5	

-2- Time Log: Home-Stake #1 Zorn.

<u>Depth</u>	<u>Time</u>	<u>Remarks</u>
2940 - 2950	6-5-5-4-5-3-6-7-4-3	Top Toronto 2946
2950 - 60	4-5-8-9-11-11-7-4-4-5	Circ. 30 min. 2954
2960 - 70	4-5-3-3-2-3-2-4-4-3	Top Douglas 2967
2970 - 80	3-3-4-3-2-2-2-2-2-2	
2980 - 90	1-1-1-2-2-2-3-2-2-3	
2990 - 3000	4-3-3-3-3-3-3-3-3-3	
3000 - 10	3-3-3-2-3-3-3-3-4-4	
3010 - 20	4-3-3-3-3-3-4-4-3-3	
3020 - 30	3-3-4-4-3-3-3-4-6-5	Top Brown Line 3027
3030 - 40	8-9-8-6-6-6-4-5-5-6	
3040 - 50	4-4-6-4-5-9-8-8-5-5	Top Lansing 3044
3050 - 60	5-8-2-7-8-3-6-6-5-5	Circ. 1 Hr. 3055
		D.S.T. #1 3047-55;
		New SV2 @ 3055
3060 - 70	5-5-5-4-4-5-7-5-5-7	Circ. 30 min. @ 3065
3070 - 80	7-7-6-7-5-4-4-4-7-7	
3080 - 90	5-6-6-8-8-9-7-5-6-4	
3090 - 3100	5-10-11-6-5-7-11-10-10-9	
3100 - 10	8-8-5-6-7-9-4-5-4-8	
3110 - 20	8-8-5-4-5-4-4-4-3-6	
3120 - 30	6-6-7-8-10-10-9-8-10-10	Circ. 45 min. @ 3125
3130 - 40	9-7-10-9-10-10-6-3-3-3	D.S.T. #2 3111-25
3140 - 50	3-4-5-6-6-4-5-5-4-2	
3150 - 60	4-6-6-5-3-3-3-5-6-6	
3160 - 70	4-3-7-8-9-9-12-12-12-10	
3170 - 80	11-12-12-12-13-11-10-12-8-6	
3180 - 90	6-7-8-7-6-8-8-9-7-5	
3190 - 3200	8-10-12-12-11-9-13-10-13-6	Circ. 45 min. @ 3192
3200 - 10	7-8-12-13-12-10-8-10-10-11	New bit 3206; 3C-4
3210 - 20	9-8-8-8-7-9-7-10-11-9	
3220 - 30	9-13-10-7-8-9-11-9-10-10	
3230 - 40	10-9-8-11-9-7-8-9-7-8	
3240 - 50	7-7-7-4-5-4-4-7-5-5	
3250 - 60	5-6-11-10-11-11-10-11-10-11	
3260 - 70	12-13-10-11-12-12-12-11-9-11	
3270 - 80	12-12-11-13-12-12-13-9-13-9	
3280 - 90	7-9-11-14-14-12-13-12-11-11	Base Kansas City 3290
3290 - 3300	7-6-5-4-5-12-12-11-11-11	Top Marmaton 3290
		Circ. 1 Hr. 3295
		Circ. 1 Hr. 3300
3300 - 07	9-5-5-6-5-5-7	Circ. 1 Hr. 3305
		Circ. 1 Hr. 3307
		D.S.T. #3 3297-3307;
		Top Conglomerate 3300
		Top Arbuckle 3303
		R. T. D. 3307

Time Log condensed by Willis Jack Magathan