FORMATION LOG

Sterling #3 Greenstreet
NW SE SE; 31-27S-13W,
Pratt County, Kansas.
Elevation: 1879 Kelly Bushing

8 5/8" Surface Casing: 360'
Comm: 10-27-56
Comp: 11-11-56

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

Depth	Formation Description	Remarks
0 - 80	Sand	Drillers log 0-3500'
80 - 360	Red bed	
360 - 880	Red bed and shale	
880 - 905	Anhydrite	Stone Corral - drillers' top
905 - 1475	Sand and shale	
1475 - 1820	Shale and limestone	
1820 - 2150	Limestone	
2150 - 2260	Limestone and shale	
2260 - 2560	Limestone	
2560 - 2680	Limestone and shale	
2680 - 2910	Shale and limestone	
2910 - 3020	Limestone and shale	
3020 - 3355	Limestone	
3355 - 3500	Shale and limestone	
3500 - 33	Limestone, gray to brown, sub-crystalline; streaks gray shale	Sample log 3500' to total depth
3533 - 38	Limestone, tan to white, sub-crystalline, cherty	
3538 - 64	Limestone, tan to buff, sub-crystalline to sucrose, some vugular porosity	No show
3564 - 67	Shale, dark gray to black, fissile	
3567 - 79	Limestone, dark gray and dark brown to black, mottled, finely crystalline to dense	
3579 - 82	Shale, black, fissile	
3582 - 3614	Limestone, light tan, dense; streaks soft brown-black shale	
3614 - 20	Shale, brown-black, soft, fissile	Heebner
3620 - 25	Limestone, dark brown, dense, resinous	Leavenworth
3625 - 32	Shale, green to gray-green, silty	Snyderville

#2- Formation Log: Sterling #3 Greenstreet.

Depth	Formation Description	Remarks
3632 - 3640	Limestone, cream, dense to finely crystalline, clean, some oolitic	Top Toronto 3632
3640 - 61	Limestone, gray, sucrose, dolomitic; much brown to dark brown resinous limestone; possible gray shale streaks	
3661 - 73	Streaks green-gray to green silty shale and dark brown limestone	Top Douglas 3661
3673 - 94	Limestone, light tan to buff, sucrose, dolomitic, possibly sandy, probably porous; trace green oolitic limestone	Amazonia?; no show
3694 - 98	Shale, gray-green	
3698 - 3740	Sand, white to light gray, calcareous, micaceous, medium to fine, angular	
3740 - 76	Shale, gray, micaceous, silty	
3776 - 80	Limestone, dark brown, dense to subcrystalline	Top Brown Lime 3776
3780 - 91	Shale, gray	
3791 - 3822	Limestone, tan to buff, finely crystalline to sucrose; chert, gray, opaque, fossiliferous; streaks gray shale	Top Lansing 3791
3822 - 24	Trace coarsely oolitic and oolicastic limestone	Some stain, no odor or free oil
3824 - 30	Limestone, as from 3800-22	
3830 - 40	Limestone, tan, crystalline to finely crystalline, large oolites; trace oolicastic and vugular porosity	Possible trace stain, no odor or free oil
3840 - 50	Limestone, gray-tan, dense to finely crystalline; some chert, gray to brown, opaque	
3850 - 57	Limestone, buff, subcrystalline to sucrose; fair vugular porosity	Dark oil stain, no odor or free oil
3857 - 92	Limestone, tan, dense; possible trace vugular porosity 3860-64; streak black shale 3879-81	No show
3892 - 98	Limestone, tan and brown, mottled, subcrystalline to finely crystalline; some vugular porosity	No show
3898 - 3921	Limestone, tan to buff, sucrose to subcrystalline, oolitic and fossiliferous; good vugular porosity	No show

-3-Formation Log: Sterling #3 Greenstreet.

Depth	Formation Description	Remarks
3921 - 3927	Limestone, dark brown to buff, dense to sucrose, oolitic and fossiliferous	
3927 - 44	Limestone, tan, sucrose to granular; some pinpoint porosity	No show
3944 - 59	Limestone, tan, dense; chert, gray to white; streak green-gray and maroon shale 3953-57	
3959 - 61	Limestone, tan, oolicastic; good porosity	Good stain, trace odor, fair show free oil; D.S.T. #1
3961 - 72	Limestone, tan, dense; chert, gray, opaque	
3972 - 82	Limestone, tan to buff, sucrose, oolicastic, good oolicastic and vugular porosity	Good stain, slight odor, fair show free oil. D.S.T. #1
3982 - 91	Limestone, light tan, dense to finely crystalline; some gray, translucent chert	
3991 - 95	Shale, green-gray and brown	
3995 - 4006	Limestone, tan, dense	
4006 - 10	Limestone, tan to buff, oolitic and oolicastic; fair oolicastic vugular and fracture porosity	Fair show free oil, slight odor; D.S.T. #2
4010 - 25	Limestone, tan, dense, some fossiliferous; chert, gray, opaque	
4025 - 28	Limestone, tan, dense, some large irregular, oolites; trace buff sucrose limestone, poor porosity; considerable gray to white, semi-devitrified chert	Trace odor and free oil; D.S.T. #2
4028 - 78	Limestone, tan, dense to finely crystalline; streaks brown, gray and maroon shale; much chert, white to gray, opaque	
4078 - 84	Limestone, tan, dense, some fossiliferous; slight pinpoint to vugular porosity; some chert	Trace free oil; D.S.T. #3
4084 - 88	Shale, black	
4088 - 95	Limestone, tan, dense to finely crystalline, some crypto-oolitic; some pinpoint and vugular porosity 4090-95	Slight show free oil and slight odor; D.S.T. #3
4095 - 4136	Mostly limestone tan to brown to gray, dense; some chert, brown to amber, translucent	Base Kansas City 4136

 Formation Log: Sterling #3 Greenstreet.

Depth	Formation Description	Remarks
4136 - 4155	Siltstone gray-green; shale, maroon	Top Marmaton 4136
4155 - 58	Limestone, tan to gray, dense to subcrystalline	
4158 - 68	Shale, gray	
4168 - 78	Limestone, as above	
4178 - 4239	Shale, gray and brown; much limestone, gray, dense, to white chalky; limestone, dark brown, dense; chert, gray, white, salmon and brown, translucent	
4239 - 54	Shale, gray, purple, red-brown and green; trace weathered limestone.	
4254 - 59	Shale, green-gray and maroon; chert, white, gray and brown-red, opaque	Conglomerate
4259 - 76	Chert, white to tan, vitreous to non-vitreous, opaque; trace translucent chert	Mississippi
4276 - 93	Shale, green-gray, bright green and maroon; some gray-green dense limestone	Top Kinderhook 4276
4293 - 4308	Chert, white to blue-white, opaque to translucent; some light gray to amber, translucent to glassy chert; some white devitrified chert	Trace black stain; D.S.T. #4
4308 - 10	Limestone, tan to gray, subcrystalline	
4310 - 21	Chert, white to blue-white, opaque to translucent, some figured, some drusy; some devitrified chert with good live stain	Top Viola 4310; some stain; D.S.T. #4
4321 - 57	Mostly chert, as above; some white chalky limestone. Some white and black crystalline to tan dense sandy limestone toward base	
4357 - 58	Shale, green	Top Simpson 4357
4358 - 60	Dolomite, dirty, brown to gray, finely crystalline, sandy	Trace dark stain
	Core #1 4360-4420; full recovery.	
4360 - 63	Dolomite, gray to brown, crystalline, sandy; green shale partings; fair vugular porosity, fair show oil; some dolomitic sand with gas bubbles	D.S.T. #5 4354-4420; D.S.T. #6 4354-77

Depth	Formation Description	Remarks
	Core #1 Contd.	
4363 - 4363½	Shale, bright green	
4363½- 64½	Dolomite, light gray, sandy, crystalline, tight; some very thin green shale partings	
4364½- 65	Shale, green	
4365 - 67½	Sand, white to green, medium grained, silty. Some very thin streaks porosity with oil saturation; many green shale streaks and inclusions	
4367½- 77	Sand, medium, angular, brown with white dolomitic cement. Good porosity and oil saturation, good odor; some thin streaks green shale	
4377 - 77¼	Dolomite, light greenish-white, finely sucrose, subrhombohedral, sandy; some very thin green shale partings	
4377¼- 79½	Dolomite, light gray-tan, very tight, no show	
4379½ - 80	Sand, fine, dolomitic, white to green; streaks fair porosity with brown oil saturation.	
4380 - 82¼	Shale, brown-black with light red-brown streak	
4382¼- 84½	Sand, fine, angular, light gray with much bright green shale in very thin interfingerings and inclusions. Some disseminated pyrite.	
4384½- 85¼	Shale, bright green with some thin sandy shale streaks bearing black phosphate nodules	
4385¼- 92	Sand, gray to brown, medium angular, poorly sorted, very quartzitic. Looks very tight but carries good saturation, odor and free oil. A few thin gray shale streaks	

Depth	Formation Description	Remarks
4392 - 4393½	Sand, white, medium angular, poorly sorted, tight; some very thin brown-gray shale partings	
4393½- 96¼	Shale, green-gray to medium gray, some sandy streaks	
4396¼-4400½	Shale, dirty gray-green, very sandy with poorly sorted sand grains. Some streaks nearly shaly sand. No show.	
4400½- 08	Sand, white, quartzitic, sub-medium, angular, well sorted, tight; many small inclusions of green shale or glauconite. Few spots dead brown oil. Most of this zone has no show.	
4408 - 20	Sand, very poorly sorted at top to very fine at bottom. Many inclusions and partings of gray shale with phosphate and green shale or glauconite inclusions. Very tight, no show.	
4420	Total Depth.	

Drill Stem Test Data: The following drill stem tests were run on the #3 Greenstreet. All test were run by Halliburton.

Lansing-Kansas City:

(1) D.S.T. 3950-85; open 1 hour - good blow for 20 minutes then decreased rapidly to small blow and remained steady for remainder test.
Recovered 300' gas.
75' oil cut mud.

Initial Closed In Pressure:	335 p.s.i.	(30 min. - still building rapidly).
Initial Flow Pressure:	30 p.s.i.	
Final Flow Pressure:	43 p.s.i.	
Final Closed In Pressure:	580 p.s.i.	(30 min. - still building rapidly).

Drill Stem Test Data Contd.:

(2) D.S.T. 4005-30; open 1 hour - small blow which gradually increased to fair blow in 40 minutes and then remained steady for remainder of test.
Recovered 210' salt water, no oil or gas.
Initial Closed In Pressure: 1530 p.s.i. (30 min.).
Initial Flow Pressure: 30 p.s.i.
Final Flow Pressure: 120 p.s.i.
Final Closed In Pressure: 1468 p.s.i. (30 min.).

(3) D.S.T. 4075-4111; open 1 hour - very small blow for 7 minutes; flushed tool at 45 minutes, very weak blow for 5 minutes.
Recovered 25' mud, very slightly gas cut, no oil or water.
Initial Closed In Pressure: 37 p.s.i. (30 min.).
Initial Flow Pressure: 25 p.s.i.
Final Flow Pressure: 28 p.s.i.
Final Closed In Pressure: 37 p.s.i. (30 min.).

Kinderhook & Viola:

(4) D.S.T. 4292-4360; open 1 hour - fair blow throughout test.
Recovered 60' very slightly gas cut mud possibly 100' gas above mud.
Initial Closed In Pressure: 195 p.s.i. (30 min.).
Initial Flow Pressure: 58 p.s.i.
Final Flow Pressure: 77 p.s.i.
Final Closed In Pressure: 176 p.s.i. (30 min.).

Simpson:

(5) D.S.T. 4354-4420; open 1 hour - fair blow throughout test.
Recovered 800' gas.
125' oil cut watery mud.
540' slightly oil cut gassy salt water.
Initial Closed In Pressure: 1427 p.s.i. (30 min.).
Initial Flow Pressure: 77 p.s.i.
Final Flow Pressure: 394 p.s.i.
Final Closed In Pressure: 1294 p.s.i. (30 min.).

(6) D.S.T. 4354-77; straddle packer test - dual packer on top, single packer below.
Open 2 hours, fair blow throughout test.
Recovered 440' gas.
210' mud - slightly oil cut.
300' slightly oil cut muddy water.
610' very slightly oil cut salt water.

Drill Stem Test Data Contd.:

Simpson Contd.:

(6) Contd. Initial Closed In Pressure: Missed.
Initial Flow Pressure: 75 p.s.i.
Final Flow Pressure: 490 p.s.i.
Final Closed In Pressure: 1240 p.s.i. (30 min.).

Samples examined and log compiled by

WENDELL S. JOHNS

MARRETT & JOHNS

TIME LOG

Sterling Drlg. Co. #3 Greenstreet,
NW SE SE; 31-27S-13W,
Pratt County, Kansas.
Elevation: 1879 Kelly Bushing
1876 Derrick Floor.

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

Depth	Time	Remarks
3500 - 3510	2-2-3-4-3-3-3-3-3-3	
3510 - 20	4-3-4-4-4-4-3-4-3-2	
3520 - 30	4-4-4-3-3-2-3-4-4-5	
3530 - 40	4-4-3-5-8-6-4-4-3-3	
3540 - 50	3-3-3-2-3-4-3-3-4-4	
3550 - 60	4-4-7-4-4-4-4-4-3-3	
3560 - 70	3-4-5-4-2-2-3-10-8-6	
3570 - 80	10-6-9-8-7-9-6-6-6-4	
3580 - 90	2-3-6-5-6-6-6-5-5-4	
3590 - 3600	5-5-4-4-5-5-6-6-6-7	
3600 - 10	5-4-3-2-5-8-10-10-8-8	
3610 - 20	7-10-10-8-4-3-3-2-2-2	Heebner 3614
3620 - 30	6-11-12-5-5-4-3-2-2-1	
3630 - 40	3-3-4-4-7-6-6-6-5-5	
3640 - 50	3-3-3-3-3-3-2-3-3-3	
3650 - 60	3-3-4-3-3-3-4-4-4-4	
3660 - 70	5-2-3-4-3-2-3-5-3-2	
3670 - 80	3-5-6-2-1-2-2-2-2-2	
3680 - 90	1-1-2-3-2-3-2-2-2-3	
3690 - 3700	2-1-2-1-2-3-4-4-3-2	
3700 - 10	2-2-2-2-2-3-2-2-2-2	
3710 - 20	2-3-3-2-3-2-3-2-3-2	
3720 - 30	2-2-2-2-2-3-2-2-3-3	
3730 - 40	2-3-2-2-2-3-2-2-2-2	
3740 - 50	4-4-3-3-3-3-3-3-3-3	
3750 - 60	3-3-3-3-3-3-2-3-3-2	
3760 - 70	3-3-2-3-3-2-3-2-3-4	
3770 - 80	2-5-3-3-3-3-9-7-6-6	Brown Lansing 3776
3780 - 90	4-3-3-4-3-4-4-4-3-3	
3790 - 3800	4-8-7-6-6-7-7-6-4-6	Lansing 3791
3800 - 10	7-4-4-4-5-7-6-7-8-7	
3810 - 20	6-5-7-7-7-7-8-5-9-9	

Depth	Time	Remarks
3820 - 3830	7-6-3-4-7-9-7-8-8-9	
3830 - 40	5-5-4-5-4-3-5-4-4-5	
3840 - 50	8-8-9-9-9-9-10-10-11-10	
3850 - 60	6-3-2-4-5-5-5-7-10-6	Circ. 3860 - 1 Hr.
3860 - 70	4-5-6-6-8-10-9-9-10-12	
3870 - 80	12-10-10-8-9-10-7-6-7-5	Trip 3876; OWV
3880 - 90	5-8-6-8-12-17-13-14-7-8	
3890 - 3900	11-10-9-7-7-8-9-7-3-5	Rough 3899-3900
3900 - 10	5-5-7-6-4-4-6-3-4-5	Rough 3904-08
3910 - 20	5-4-3-3-3-5-5-3-4-4	Circ. 3920 - 1 Hr.
3920 - 30	4-7-8-9-5-5-6-5-4-4	
3930 - 40	2-3-3-3-3-5-5-7-3-6	
3940 - 50	4-3-5-6-7-10-10-11-12-11	
3950 - 60	15-11-8-7-5-5-6-10-12-1	
3960 - 70	2-11-12-11-11-10-10-11-10-10	
3970 - 80	10-9-5-2-4-2-2-4-2-5	Rough 3973-76
3980 - 90	6-4-10-11-11-6-5-5-5-5	Circ. 3985 - 1 1/2 Hrs. D.S.T. #1 3950-85 New Smith 3C2 bit @ 3985
3990 - 4000	5-4-4-5-4-5-5-6-6-6	
4000 - 10	5-5-5-5-5-5-3-2-2-3	
4010 - 20	7-5-6-6-6-5-5-6-6-5	
4020 - 30	5-5-7-6-6-5-4-4-5-7	Rough 4026-28
4030 - 40	7-8-7-8-5-4-6-6-4-5	Circ. 4030 1 1/2 Hrs. D.S.T. #2 4005-30
4040 - 50	8-9-9-8-8-8-8-8-9-8	
4050 - 60	7-7-8-7-5-6-7-8-8-8	
4060 - 70	8-7-7-8-8-7-7-6-6-7	
4070 - 80	7-8-8-8-11-10-5-9-10-10	Rough 4076-77
4080 - 90	10-10-10-14-5-9-11-11-12-14	
4090 - 4100	12-11-10-10-10-12-13-13-14-15	
4100 - 10	13-13-10-10-10-12-10-5-9-12	
4110 - 20	9-5-6-8-8-9-7-7-7-8	Circ. 4111 - 1 1/2 Hrs. D.S.T. #3 4075-4111 New W7 bit @ 4111
3120 - 30	8-7-7-7-7-5-5-5-6-5	
4130 - 40	6-7-7-7-8-7-6-5-4-4	Base Kansas City 4136
4140 - 50	4-3-3-4-4-4-5-5-3-3	
4150 - 60	4-4-5-5-5-9-7-8-5-6	Rough 4155-58
4160 - 70	6-5-5-5-4-5-5-5-7-8	Slightly rough to rough 4166
4170 - 80	7-7-8-7-6-7-8-7-6-5	
4180 - 90	5-5-7-9-8-7-7-6-7-7	
4190 - 4200	5-5-5-4-5-10-7-6-6-6	Rough 4195-99
4200 - 10	8-7-7-7-10-5-5-7-9-10	
4210 - 20	9-12-12-11-15-9-11-9-9-9	
4220 - 30	9-10-11-10-9-8-9-8-8-8	

-3- Time Log: Sterling #3 Greenstreet.

Depth	Time	Remarks
4230 - 4240	9-10-9-9-8-9-10-9-10-12	
4240 - 50	10-10-13-13-12-12-10-11-11-15	
4250 - 60	13-9-9-10-7-4-3-3-3-4	Trip 4251; W7R Sr 4254-59 Conglomerate 4254 Mississippi 4259
4260 - 70	3-4-3-4-5-4-5-4-3-5	
4270 - 80	4-6-4-5-6-6-15-15-17-17	Kinderhook 4276
4280 - 90	15-16-15-15-15-14-15-18-18-15	
4290 - 4300	13-10-10-7-6-5-5-6-5-5	
4300 - 10	5-6-6-7-6-5-4-5-14-10	Rough 4307-08 Top Viola 4310
4310 - 20	7-6-4-4-6-8-5-6-5-7	Rough 4318-21
4320 - 30	6-10-8-10-9-11-8-9-8-8	Rough 4327-28
4330 - 40	11-13-9-13-8-8-11-10-9-8	Rough 4332-35
4340 - 50	8-9-12-13-14-15-20-13-18-17	Rough 4343-44 Rough 4347-48 Circ. 4350 - 1 Hr.
4350 - 60	13-19-16-16-12-12-17-9-11-15	Top Simpson 4357 Circ. 4360 - 1 1/2 Hrs. D.S.T. #4 4296-4360 Core 4360-4420
4360 - 70	17-10-7-15-16-12-10-9-7-7	
4370 - 80	9-12-8-6-8-8-7-10-16-10	
4380 - 90	7-8-8-8-10-14-16-26-20-18	
4390 - 4400	23-14-13-18-14-19-12-10-9-10	
4400 - 10	14-14-11-13-9-8-6-7-6-6	
4410 - 20	7-7-6-4-6-7-8-6-7-10	T.D. 4420 D & A 11-11-56 D.S.T. #5 4354-4420 D.S.T. #6 4354-4377

Time Log Condensed by Wendell S. Johns.