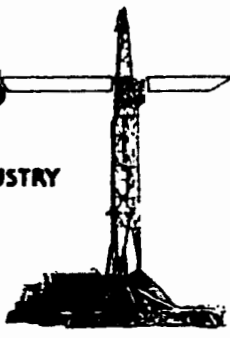


GOOLSBY BROTHERS
and associates, Inc.

CONSULTING GEOLOGISTS TO THE ENERGY INDUSTRY
Oil & Gas-Coal

1645 Court Place, Suite 303
Denver, CO 80202
(303) 893-1718



Computer Inventoried

RELEASED

APR 26 2000

ORIGINAL

CONFIDENTIAL

FROM CONFIDENTIAL

GEOLOGICAL WELLSITE REPORT

MAXX PETROLEUM, LTD
BURIED HILLS PRODUCTION COMPANY

NOV 28
CONFIDENTIAL

Maxx Billings #1 HZ

SURF: 205' FSL, 1458' FWL SW/4 SE/4 SW/4 Sec. 25, T22S, R23W

BHL: 2347' FNL, 1030' FWL NW/4 Section 36, T22S, R23W
Hodgeman County, Kansas

15-083-21447-0100

Jeffrey R. Barkley
Barry J. Fisler

Consulting Geologists

Page 26 Missing

RECEIVED
KANSAS CORPORATION COMMISSION

SEP 03 1997

CONSERVATION DIVISION
WICHITA, KS

WELL DATA

RELEASED

APR 26 2000

FROM CONFIDENTIAL

OPERATOR: Maxx Petroleum LTD
(Buried Hills Production Co.)

WELL NAME: Maxx Billings #1 HZ

LOCATION: Surface: 205' FSL, 1458' FWL
Section 25, T22S, R23W
Bottom Hole Location: 2346.9' FNL, 1030.1' FWL, (NW)
Sec. 36, T22S, R23W
Hodgeman County, Kansas

FIELD: Oppy South (Mississippian Osage)
ELEVATION: G.L. 2281' K.B. 2294'

ROAD DIRECTIONS: From Jetmore, 5 miles east on Kansas 156, north 1/2 mile, east
1/2 mile into location.

DRILLING CONTRACTOR: Nabors Drilling, Rig 296
TOOLPUSHER: Murray Becker, Bill Brown

GEOLOGICAL WELLSITE SUPERVISION: Goolsby Brothers & Assoc., Inc.
GEOLOGIST: Jeff Barkley & Barry J. Fisler

MUD ENGINEERING: Baker Hughes Inteq
PROGRAM: Salt Gel/chem to 4812', Bio- Lose 4812' to total depth

GEOPHYSICAL LOGGING: MWD Gamma Ray provided by Sperry-Sun, 3900 ft to TD.

DIRECTIONAL DRILLING: Sperry Sun
MWD: Sperry Sun

HOLE SIZE: 12 1/4" to 550'. 8 3/4" to 4812', 6 1/8" to total depth.
SURFACE CASING: 9 5/8" to 528'. 7" to 4812'.

SPUD DATE: 25 July 1997
DATE TD REACHED: 22 August 1997
TOTAL DEPTH: 6856' Driller

SAMPLE PROGRAM: 10 ft intervals 4400' to total depth.

BOTTOM HOLE FORMATION: Mississippian - Warsaw
WELL STATUS: Probable Osage/Warsaw oil producer.

REMARKS: TVD @ TD: 4525.3 ft (-2231.3) @ vertical section of
2587.4'

DAILY DRILLING REPORT

6:00 AM Reports

Spud well July 25 at 7:30 PM

<u>Day No.</u>	<u>Date</u>	<u>Depth</u>	<u>Feet Made</u>	<u>Rotating Hours</u>
1	7/26	550	550	4 ¾
2	7/27	1484	934	7 ½
3	7/28	2861	1377	21 ¾
4	7/29	3559	698	18 ½
5	7/30	3963'	404	10 ¼
6	7/31	4260	297	9 1/2
7	8/1	4482	222	12 1/4
8	8/2	4482	0	stuck pipe/fishing
9	8/3	4482	0	stuck pipe/fishing
10	8/4	4482	0	stuck pipe/fishing
11	8/5	4482	0	stuck pipe/fishing
12	8/6	4551	69	5 1/4
13	8/7	*4551	0	plug back hole
14	8/8	*4551	0	stuck pipe
15	8/9	*4551	0	stuck pipe, rig repairs
16	8/10	*4551	0	rig repairs
17	8/11	*4551	0	rig repairs, cond. hole
18	8/12	4482	19	14 drill cement, time drill
19	8/13	4506	24	14 time drill
20	8/14	4546	40	15 1/2
21	8/15	4688	142	17
22	8/16	4812	124	run & cmt 7" csg
23	8/17	4812	0	run & cmt 7" csg
25	8/18	4812	0	drill cmt & float equip.
26	8/19	5170	358	11 3/4
27	8/20	5863	693	18
28	8/21	6257	394	14
29	8/22	6783	526	19 3/4
30	8/23	6856	73	4 3/4

* prior to plug back

MUD RECORD

<u>DEPTH</u>	<u>WT</u>	<u>VIS</u>	<u>WL</u>	<u>PV</u>	<u>GEL</u>	<u>YP</u>	<u>pH</u>	<u>CHLOR</u>
1603	8.5	27	--	--	--	--	11.1	1600
2893	9.4	27	--	--	--	--	8.3	107K
3590	9.4	27	--	--	--	--	8.0	103K
3972	9.4	27	--	--	--	--	8.1	86K
4273	9.5	27	NC	--	--	--	8.0	112K
4482	9.4	30	NC	--	-	--	8.2	94K
4482	9.5	37	100	5	10/19	18	8.2	86K
4482	9.4	49	14.4	11	18/38	30	8.1	75K
4482	9.3	38	18.0	12	12/36	20	8.0	67K
4482	9.3	38	16.5	6	10/26	20	8.0	70K
4551	9.3	36	20.0	10	2/8	6	10.5	69K
4203	9.0	36	10.0	7	2/8	11	10.5	65K
4488	9.1	36	21.0	9	1/1	4	10.5	62K
4507	9.1+	46	11.2	12	2/12	10	10.5	64K
4561	9.2+	43	10.2	10	2/9	10	10.5	64K
4718	9.3	47	10.8	15	4/2+	11	10.5	68K
4812	8.7	34	7.0	4	1/1	1	7.5	9K
5209	8.4	34	7.2	2	0/0	1	8.4	5K
5874	8.4	29	13.0	2	0/0	1	8.0	2K
6282	8.4	32	10.2	3	0-0	3	8.0	1.8K
6561	8.4	29	11.8	2	0/0	1	7.5	5K
6782	8.4	29	10.0	2	0/0	1	9.5	3.4k

BIT DATA

<u>NO.</u>	<u>MAKE</u>	<u>TYPE</u>	<u>SIZE</u>	<u>DEPTH</u> <u>OUT</u>	<u>FEET</u> <u>MADE</u>	<u>HOURS</u> <u>RUN</u>	<u>REMARKS</u>
1	VAR	L117	12 1/4	550	550	4 3/4	
2	VAR	517	8 3/4	3160	2610	38 1/2	
3	RTC	HP51H	8 3/4	4493	1333*	40 3/4*	
4	HTC	GT1	8 3/4	4536	43	21 3/4	
6	RTC	HP51H	8 3/4	4630	94	12 1/4	re-run #3
7	RTC	HP51H	8 3/4	4812	182	13 1/4	
1HZ	RTC	EHP53A	6 1/8	5968	1156	35	
2HZ	RTC	EHP53A	6 1/8	6856	888	33 1/4	

*Plug back & cement drilling footage & hours not included

FORMATION TOPS

Elevations calculated using a KB elevation of 2294 feet.

Tops are from MWD Gamma Tool

Intervals above the Lansing not logged by MWD

FORMATION	MEASURED DEPTH	TVD	SUB-SEA	VERTICAL SECTION
<u>PENNSYLVANIAN</u>				
Lansing Group	3898	3898	-1604	14
Bonner Spgs Shale	3955	3954	-1660	16
Base Kansas City	4240	4224	-1930	99
Marmaton Group	4288	4266	-1972	122
Pawnee	4363	4329	-2035	163
Lebette Shale	4465	4406	-2112	230
Ft. Scott	4482	4417	-2123	242
Cherokee Shale	4516	4438.5	-2144.5	268.5
 <u>MISSISSIPPIAN</u>				
Warsaw	4624	4490	-2196	360
Osage porosity	4771	4523	-2229	505

Goolsby Brothers & Assoc., Inc.			Survey Report								
			MIN. CURVATURE CALCULATIONS (SPE-3362)								
OPERATOR: Maxx Petroleum							START:	7/25/97			
WELL: Billings #1 HZ							FINISH:	8/22/97			
LOCATION: Hodgeman County, Kansas							Tool Length	52 ft			
KB	2294						PROP. DIRECTION		190.02		
SURVEY			TRUE						DLS/	SUB-SEA	
NUM	MD	INC	AZM	TVD	N-S	E-W	SECT	100.00	AT TVD		
TIE IN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2294.00		
2	587.25	0.40	95.40	587.25	-0.19	2.04	-0.17	0.07	1706.75		
3	1053.39	1.10	23.90	1053.35	3.74	5.47	-4.64	0.22	1240.65		
4	1505.49	0.50	218.10	1505.43	6.16	6.01	-7.11	0.35	788.57		
5	1957.59	1.20	94.00	1957.50	4.28	9.52	-5.87	0.34	336.50		
6	2409.70	0.80	219.40	2409.57	1.51	12.24	-3.62	0.40	-115.57		
7	2871.15	0.90	220.10	2870.97	-3.75	7.86	2.33	0.02	-576.97		
8	3346.65	0.60	211.10	3346.43	-8.74	4.17	7.88	0.07	-1052.43		
9	3822.15	1.10	237.60	3821.88	-13.32	-0.97	13.28	0.13	-1527.88		
10	3900.00	1.60	241.00	3899.71	-14.25	-2.55	14.47	0.65	-1605.71		
11	3947.31	2.10	235.50	3946.99	-15.06	-3.84	15.50	1.12	-1652.99		
12	3979.13	5.60	213.80	3978.74	-16.68	-5.19	17.33	11.72	-1684.74		
13	4010.86	9.10	200.60	4010.20	-20.32	-6.93	21.21	12.18	-1716.20		
14	4042.54	14.10	197.80	4041.23	-26.34	-9.00	27.50	15.88	-1747.23		
15	4074.20	17.00	190.20	4071.73	-34.57	-11.00	35.95	11.18	-1777.73		
16	4105.93	20.00	199.30	4101.82	-44.26	-13.61	45.95	13.10	-1807.82		
17	4137.62	21.60	199.30	4131.44	-54.88	-17.33	57.06	5.05	-1837.44		
18	4169.33	23.90	198.40	4160.68	-66.48	-21.29	69.17	7.34	-1866.68		
19	4201.01	25.70	197.90	4189.44	-79.11	-25.42	82.33	5.72	-1895.44		
20	4232.61	26.70	192.80	4217.80	-92.56	-29.10	96.21	7.79	-1923.80		
21	4264.58	27.70	185.40	4246.24	-106.96	-31.40	110.79	11.03	-1952.24		
22	4296.34	31.60	187.60	4273.84	-122.57	-33.19	126.47	12.75	-1979.84		
23	4327.92	34.00	184.70	4300.38	-139.57	-35.01	143.53	9.08	-2006.38		
24	4359.72	36.40	184.20	4326.37	-157.84	-36.43	161.78	7.60	-2032.37		
25	4391.52	39.20	179.30	4351.50	-177.31	-37.00	181.04	12.91	-2057.50		
26	4431.97	42.50	180.90	4382.09	-203.76	-37.06	207.10	8.56	-2088.09		
27	4463.71	46.00	182.10	4404.82	-225.90	-37.64	229.00	11.34	-2110.82		
28	4478.00	47.50	184.00	4414.61	-236.29	-38.20	239.33	14.28	-2120.61		
29	4493.93	49.30	184.20	4425.19	-248.17	-39.05	251.18	11.34	-2131.19		
30	4525.58	54.90	186.00	4444.63	-273.04	-41.28	276.05	18.25	-2150.63		
31	4557.16	59.90	187.90	4461.64	-299.43	-44.52	302.61	16.62	-2167.64		
32	4588.97	64.70	191.80	4476.42	-327.16	-49.35	330.76	18.58	-2182.42		
33	4620.72	68.50	194.40	4489.03	-355.53	-55.96	359.85	14.13	-2195.03		
34	4652.47	70.80	193.40	4500.07	-384.43	-63.11	389.54	7.82	-2206.07		
35	4684.25	74.90	194.40	4509.44	-413.90	-70.41	419.83	13.25	-2215.44		
36	4716.06	79.60	192.50	4516.46	-444.06	-77.62	450.79	15.88	-2222.46		
37	4747.79	83.60	193.50	4521.09	-474.64	-84.68	482.14	12.99	-2227.09		
38	4754.00	83.90	193.50	4521.77	-480.64	-86.12	488.30	4.83	-2227.77		
39	4812.00	86.00	192.00	4526.88	-536.99	-98.87	546.00	4.44	-2232.88		
40	4827.70	88.20	193.20	4527.67	-552.29	-102.29	561.66	15.96	-2233.67		
41	4859.46	93.10	192.90	4527.31	-583.22	-109.46	593.37	15.46	-2233.31		
42	4891.29	95.80	191.70	4524.84	-614.22	-116.22	625.07	9.28	-2230.84		
43	4923.11	95.40	191.60	4521.74	-645.24	-122.61	656.73	1.30	-2227.74		
44	4954.86	94.90	190.10	4518.89	-676.29	-128.56	688.35	4.96	-2224.89		
45	4986.61	93.20	190.30	4516.64	-707.46	-134.17	720.02	5.39	-2222.64		
46	5018.27	91.40	189.20	4515.37	-738.64	-139.53	751.65	6.66	-2221.37		
47	5049.98	91.80	188.90	4514.49	-769.94	-144.51	783.34	1.58	-2220.49		
48	5081.54	90.10	189.20	4513.96	-801.10	-149.48	814.89	5.47	-2219.96		
49	5113.27	87.30	189.40	4514.68	-832.40	-154.60	846.61	8.85	-2220.68		
50	5145.00	85.50	191.20	4516.68	-863.56	-160.27	878.27	8.01	-2222.68		
51	5176.65	86.40	188.40	4518.91	-894.66	-165.64	909.84	9.27	-2224.91		
52	5208.41	88.00	187.70	4520.46	-926.07	-170.08	941.54	5.50	-2226.46		

Goolsby Brothers & Assoc., Inc.				Survey Report						
				MIN. CURVATURE CALCULATIONS (SPE-3362)						
OPERATOR:		Maxx Petroleum			START:		7/25/97			
WELL:		Billings #1 HZ			FINISH:		8/22/97			
LOCATION:		Hodgeman County, Kansas			Tool Length		52 ft			
KB	2294			PROP. DIRECTION		190.02				
SURVEY		TRUE						DLS/	SUB-SEA	
NUM	MD	INC	AZM	TVD	N-S	E-W	SECT	100.00	AT TVD	
53	5240.20	90.70	187.90	4520.82	-957.56	-174.39	973.30	8.52	-2226.82	
54	5271.93	90.90	187.60	4520.38	-989.00	-178.67	1005.00	1.14	-2226.38	
55	5303.67	89.90	187.50	4520.16	-1020.46	-182.84	1036.71	3.17	-2226.16	
56	5335.41	90.50	187.70	4520.05	-1051.93	-187.04	1068.42	1.99	-2226.05	
57	5367.21	88.70	186.80	4520.27	-1083.47	-191.05	1100.18	6.33	-2226.27	
58	5398.98	85.90	189.00	4521.77	-1114.90	-195.41	1131.89	11.20	-2227.77	
59	5430.73	86.30	188.80	4523.93	-1146.19	-200.31	1163.56	1.41	-2229.93	
60	5462.44	87.40	189.00	4525.67	-1177.47	-205.21	1195.22	3.53	-2231.67	
61	5494.14	87.50	188.00	4527.08	-1208.79	-209.89	1226.88	3.17	-2233.08	
62	5525.84	88.90	188.00	4528.08	-1240.17	-214.30	1258.54	4.42	-2234.08	
63	5557.57	89.50	188.80	4528.52	-1271.55	-218.94	1290.25	3.15	-2234.52	
64	5589.21	90.80	189.90	4528.44	-1302.77	-224.08	1321.89	5.38	-2234.44	
65	5620.80	91.50	188.70	4527.80	-1333.94	-229.18	1353.47	4.40	-2233.80	
66	5652.56	92.00	188.80	4526.83	-1365.32	-234.01	1385.21	1.61	-2232.83	
67	5684.21	90.30	189.20	4526.20	-1396.57	-238.96	1416.84	5.52	-2232.20	
68	5715.88	87.90	190.20	4526.69	-1427.78	-244.30	1448.51	8.21	-2232.69	
69	5747.66	87.70	189.50	4527.91	-1459.07	-249.73	1480.26	2.29	-2233.91	
70	5779.39	88.00	188.80	4529.10	-1490.37	-254.77	1511.97	2.40	-2235.10	
71	5811.11	87.30	190.00	4530.41	-1521.64	-259.95	1543.66	4.38	-2236.41	
72	5842.82	88.70	189.50	4531.51	-1552.87	-265.31	1575.35	4.69	-2237.51	
73	5874.68	89.40	190.10	4532.04	-1584.26	-270.74	1607.20	2.89	-2238.04	
74	5906.40	90.40	189.90	4532.10	-1615.50	-276.24	1638.92	3.22	-2238.10	
75	5938.18	91.80	189.70	4531.49	-1646.81	-281.65	1670.69	4.45	-2237.49	
76	5969.98	91.10	189.80	4530.68	-1678.14	-287.03	1702.48	2.22	-2236.68	
77	6001.63	90.80	189.20	4530.16	-1709.35	-292.26	1734.13	2.12	-2236.16	
78	6033.33	90.80	190.10	4529.71	-1740.60	-297.57	1765.82	2.84	-2235.71	
79	6064.95	89.60	190.30	4529.60	-1771.72	-303.17	1797.44	3.85	-2235.60	
80	6096.53	89.10	190.30	4529.96	-1802.79	-308.82	1829.02	1.58	-2235.96	
81	6128.32	88.60	190.90	4530.60	-1834.03	-314.66	1860.80	2.46	-2236.60	
82	6160.03	87.30	192.40	4531.73	-1865.06	-321.06	1892.48	6.26	-2237.73	
83	6191.81	90.10	191.90	4532.45	-1896.12	-327.75	1924.22	8.95	-2238.45	
84	6223.53	91.80	192.30	4531.93	-1927.13	-334.40	1955.92	5.51	-2237.93	
85	6255.28	90.70	192.40	4531.24	-1958.14	-341.19	1987.63	3.48	-2237.24	
86	6286.95	86.90	190.90	4531.90	-1989.14	-347.58	2019.28	12.90	-2237.90	
87	6318.89	86.80	191.70	4533.65	-2020.42	-353.83	2051.16	2.52	-2239.65	
88	6350.57	88.50	188.70	4534.95	-2051.56	-359.43	2082.81	10.88	-2240.95	
89	6382.32	90.30	189.20	4535.29	-2082.92	-364.37	2114.55	5.88	-2241.29	
90	6414.00	91.70	187.50	4534.73	-2114.26	-368.97	2146.21	6.95	-2240.73	
91	6445.69	91.60	187.90	4533.82	-2145.65	-373.21	2177.86	1.30	-2239.82	
92	6477.41	90.20	188.30	4533.32	-2177.05	-377.68	2209.56	4.59	-2239.32	
93	6509.16	90.30	187.40	4533.18	-2208.50	-382.02	2241.28	2.85	-2239.18	
94	6540.89	91.20	186.60	4532.77	-2239.99	-385.89	2272.97	3.79	-2238.77	
95	6572.60	92.00	186.70	4531.88	-2271.48	-389.56	2304.61	2.54	-2237.88	
96	6604.32	92.50	188.30	4530.64	-2302.90	-393.69	2336.27	5.28	-2236.64	
97	6636.04	92.30	187.20	4529.31	-2334.30	-397.97	2367.94	3.52	-2235.31	
98	6667.88	91.50	188.00	4528.25	-2365.85	-402.18	2399.73	3.55	-2234.25	
99	6699.66	89.90	188.20	4527.87	-2397.31	-406.65	2431.49	5.07	-2233.87	
100	6731.46	90.00	188.40	4527.89	-2428.77	-411.24	2463.28	0.70	-2233.89	
101	6763.21	92.30	187.40	4527.26	-2460.21	-415.61	2495.00	7.90	-2233.26	
102	6794.97	94.90	187.70	4525.26	-2491.63	-419.77	2526.66	8.24	-2231.26	
prj	6856.00	95.00	187.70	4520.00	-2551.89	-427.92	2587.41	0.16	-2226.00	

SAMPLE DESCRIPTIONS

SAMPLES DESCRIBED FROM LAGGED SAMPLES CAUGHT BY RIG HANDS SAMPLE QUALITY FAIR

- 4400 – 4410 LS (80%) wh-crm, buff, mudst & wkst, gen hd & dns, com fos frags, gen tt, nsoc. SH (20%) m gy, vcol, sb-blky to plty. Tr red bed cavings.
- 4410 – 4420 LS (60%) wh-crm, buff, mudst-wkst, gen hd, dns, com fos frags, gen tt, nsoc. LCM (30%). SH (10%) m gy, vcol.
- 4420 – 4430 LS (70%) wh-crm, buff, tan, mudst & wkst, gen hd & dns, com fos frags, occ dol, tt-occ gd ool-mold por, nsoc. SH (30%) as above, also blk, carb.
- 4430 – 4440 LS (70%) wh-crm, buff, tan, mudst & wkst, hd, dns, com fos frags, occ dol, tt-occ gd ool-mold por, occ p-p vug por, nsoc. SH (30%) m-dk gy, vcol, tr blk, carb.
- 4440 – 4450 LS (80%) wh-crm, buff, mudst-occ wkst, hd, dns, occ fos frags, tr chty, tr dol, tt-tr gd ool-mold por, nsoc. SH (20%) m-dk gy, vcol, tr blk & carb.
- 4450 – 4460 LS (70%) wh-crm, buff, gy brn, mudst-occ wkst, hd-frm, occ micgran, sl arg, tr chty, gen tt, nsoc. SH (30%) m-dk gy, vcol, plty to sb-blky, slty, occ carb.
- 4460 – 4470 LS (60%) wh-crm, tan, gy brn, mudst-occ wkst, hd-frm, gen dns, occ fos frags, occ arg, tr rex1, tt, nsoc. SH (40%) dk-m gy, vcol, frm-hd, occ carb.
- Trip for bit, stuck pipe, fish for 4+ days at 4482'
- 4470 – 4480 Sample not circulated out or caught after trip.
- 4480 – 4490 SH (55%) m-dk-lt gy, frm, blky to sb-plty, sme v carb. LS (35%) off-wh, buff, lt-m gy, pred mudst w/ scat fos frags, var cln to mod arg, p vis por, nsoc. 10% cvgs, pred red Permian sh.
- 4490 – 4500 SH (45%) m-dk gy, less com lt gy, similar to above. LS (45%) off-wh, buff, lt gy, mudst w/ mnr wkst, sme ool, var cln to sl arg, v p vis por, nsoc. 10% cvgs, pred red Permian sh.
- 4500 – 4510 LS (60%) off-wh, buff, v lt gy, pred mudst w/ mnr wkst, hd, scat fos frags, var cln to sl arg, sme dolic, tr cht, most dns w/ v p vis por, nsoc. SH (35%) m-lt gy, mnr gy-gn, frm, sb-plty, sl dolic, decr in dk gy & blk from above. 5% cvgs, pred red Permian sh.

- 4510 – 4520 LS (70%) off wh, buff, tr lt gy, mudst-occ wkst, hd, occ fos frags, gen cln-sl arg, occ dolic, tr cht, pred dns, tt, nsoc. SH (25%) gy, occ vcol, frm, sb-plty, sl dolic. 5% cvgs, pred red Permian Sh.
- 4520 – 4530 SH (60%) v dk-m gy, occ blk, gy gn, sb-blky to plty, hd-frm, gen carb, slty. LS (40%) off wh, tan, mudst-occ wkst, hd, occ fos frags, gen hd & dns, occ chky, tr chty, tt, nsoc.
- 4530 – 4540 LS (60%) off wh, tan, mudst-tr wkst, hd-frm, occ fos frags, gen cln, pred dns, occ chky, tr cht, tr p-p por, tr brn stn, tr dul yel flor, slo bldg yel cut. SH (40%) v dk-m gy, occ gygn, sb-blky to plty, hd-frm, gen carb, slty.
- 4540 – 4550 LS (80%) off wh, tan, mudst-tr wkst, hd-frm, tr fos frags, gen hd & dns, occ chky, tr chty, tt, nsoc. SH (20%) m-dk gy, occ gygn, sb-blky to plty, hd-frm, gen carb, slty.
- Could not make casing point target , plug back to 4463' and attempt to kick-off cement plug via time drilling.
- 4463 – 4470' Cement (80%). LS (10%) wh-crm, mudst, gen hd & dns, occ fos frags, tr chky, tt, nsoc. SH (10%) dk-m gy, occ vcol, sb-blky to plty, slty, frm-hd, occ carb.
- 4470 – 4475' Cement (75%). SH (10%) m-dk gy, frm-hd, sme carb. LS (5%) as above. (10%) cavings, mostly Permian red SH.
- 4475 – 4480 Cement (80%). SH (5%) m-dk gy, frm-hd, sme carb. LS (5%) as above. (10%) cavings, mostly Permian red SH.
- 4480 – 4485 Cement (80%). SH (5%) m-dk gy, frm-hd, sme carb. LS (5%) as above. (10%) cavings, mostly Permian red SH.
- 4485 – 4490 Cement (80%). LS (10%) off-wh, wh, buff, pred mudst w/ tr wkst, scat fos frags, hd, dns, v p vis por, n sho. 10% cvgs, mostly Permian red SH, mnr m-dk gy.
- trip for bit @ 4493'
- 4490 – 4495 poor sample after trip, mostly cavings
- 4495 – 4500 Cement (70%). LS (15%) off-wh, lt gy, buff, pred mudst, scat fos frags, tr ool, most hd & dns w/ v p vis por, nsoc. 15% cavings, mostly Permian red sh.
- 4500 – 4505 Cement (45%). LS (40%) off-wh, crm, mudst w/ mnr wkst, hd, var cln to sl arg, scat fos frags, p vis por, nsoc. 15% cvgs, pred red Permian sh.

- 4505 – 4510 LS (60%) off-wh, v lt gy, mudst w/ tr wkst, hd, most cln, sme mot w/ arg mat, occ fos frag, sme chty, p vis por, nsoc. Cement (25%). SH (15%) lt-m gy, mnr red cvgs.
- 4510 – 4520 LS (75%) off-wh, lt gy, mnr m gy, mudst w/ mnr wkst, hd, var cln to mod arg, occ fos frag, dns, v p vis por, nsoc. SH (10%) m gy, hd, sbplty, calc, carb. 15% cmt & cvgs.
- 4520 – 4530 SH (60%) dk gy-blk, m gy, frm-hd, sbblky-plty, gen carb, sl calc i.p, slty. LS (30%) off-wh, occ m gy, mudst, cln to mod arg, dns, hd-frm, occ fos frags, tr cht, tt, nsoc. 10% CMT & SH cvgs.
- trip for bit & directional assembly @ 4536'.
- 4530 – 4540 LS (50%) off-wh, wh, lt gy, mudst, var cln to mod arg, hd, dns, rr fos frag, v p vis por, nsoc. SH (30%) m-dk gy, blk. 20% cmt & cvgs.
- 4540 – 4550 SH (45%) m to dk gy, frm, blk, dolie. LS (45%) off-wh, wh, v lt gy, mudst, hd, var cln to mod arg, rr fos frag, v p vis por, nsoc. 10% cvgs.
- 4550 – 4560 LS (50%) off-wh, wh, similar to above. SH (40%) pred lt to m gy, mnr dk gy to blk. 10% cvgs, mostly Permian red sh.
- 4560 – 4570 LS (55%) off-wh, lt gy, buff, wh, mudst, most cln, sme sl arg, rr fos frag, dns, v p vis por, nsoc. SH (35%) lt to m gy, mnr gy-gn. 10% cvgs.
- 4570 – 4580 LS (60%) similar to above. SH (30%) as above, 10% cvgs.
- 4580 – 4590 LS (65%) off-wh, buff, wh, v lt gy, mudst w/ tr wkst, hd, most cln, sme sl to mod arg, occ fos frag, dns, p vis por, nsoc. SH (25%) lt-m gy, mnr dk gy & lt gy-gn, sme dolie. 10% cvgs.
- 4590 – 4600 LS (65%) similar to above, v p vis por, tr w/ blk bitinous coating, bri yel flr, fst stmg cut. SH (30%) lt to m gy, incr in gy-gn from above. 5% cvgs.
- 4600 – 4610 LS (55%) v lt tan, off-wh, buff, mudst, most cln, sme sl arg, dns, v p vis por, tr w/ blk bitinous stn, almost all w/ nsoc. SH (40%) gy-gn, lt gy, mnr mar. 5% cvgs.
- 4610 – 4620 LS (60%) lt tan, off-wh, mudst, gen cln, occ sl arg, hd, tt, tr bitinous stn, bri yel flr, gd fast stmg cut. SH (40%) gy-gn, mar, vcol, occ mot, sb blk to sb plty, frm-hd, slty, sb-wxy i.p, tr pyr & imbd cgl qtz grs.

- 4620 – 4630 SH (50%) gy-gn, mar, gy, vcol, occ mot, sb-blky to sb-plty, hd-frm, slty, sb-wxy i.p, tr pyr & imbd cgl qtz grs. LS (40%) gen as above, occ bitinous stn, occ mod bri yel flor, slo stmg to mky cut. 10% Qtz frags & occ euhed xls. Tr SS, trnsl, tr v lt gy-gn, vf to lse m grs, ang to sb-rd, p srt, occ calc, fri to hd, no vis por, nsofc.
- trip for directional assembly @ 4630'.
- 4630 – 4640 SH (60%) gy-gn, mar, gy, vcol, mot i.p, sb-blky to plty, frm-hd, slty, sb-wxy i.p, occ imbed qtz grs. LS (30%) lt tan, off-wh, mudst w/ occ wkst, gen dns & hd, pred cln, occ fos frags, tt, occ bitinous mat, occ mod bri yel flor, fair fast stmg cuts. 10% Qtz frags & cgl SS, as above.
- 4640 - 4650 SH (60%) gy-gn, mar, lt gy, sme vcol mot, tr imbed rd f to m qtz gr. LS (30%) similar to above w/ decr in bit stn. 10% cvgs.
- 4650 – 4660 SH (65%) gy-gn, lt gn, lt gy, mar, often mot vcol, tr qtz sd gr & xl, frm. LS (25%) off-wh, lt gy, mudst, cln to sl arg, hd, dns, rr cht incl, v p vis por, nsoc. 10% cvgs.
- 4660 – 4670 SH (55%) similar to above. LS 10% as above, sme pos cvgs. CHT (10%) clr, wh, tan, often mot apr, tr w/ blk dd o & spty dk brn o stn w/ fst stmg cut, sme w/ dolie incl. SS 10% lt gy, clr, vf-f-m gr, hd, v silic, p vis por, most w/ blk dd o stn & spty dk brn o stn w/ fst stmg cut. DOL (15%) lt tan, v lt gy, off-wh, micxl, hd, dns, sme chty, v p vis por, sme w/ spty lt brn o stn & fst stmg cut.
- 4670 – 4680 DOL (50%) off-wh, wh, v lt tan, micxl, cln, hd, dns, occ sh or cht incl, p vis por, prob low perm, 50% w/ spty or patchy lt brn o stn, bri yel flor, fst stmg cut. SH (40%) as above. SS/CHT (10%) clr, wh, trnsl, hd, dns, v silic ss w/ com cht frags, sme w/ spty dk brn o stn.
- 4680 – 4690 DOL (60%) off-wh, wh, v lt tan, as above, scat cht incl, 40% w/ spty or patchy dk brn o stn, bri yel flor, fst stmg cut. SH (40%) vcol, as above, most prob cvgs.
- 4690 – 4700 DOL (65%) similar to above, scat cht, 30% w/ spty or patchy dk brn o stn, bri yel flor, fst stmg cut. SH (35%) similar to above.
- 4700 – 4710 DOL (70%) off-wh, wh, v lt tan, pred micxl w/ tr vf rexl patch, cln, hd, rr cht & sh incl, p vis por, 50% w/ spty to even brn o stn, bri yel flor, fst stmg cut. SH (20%) similar to above. CHT (10%) trnsl, wh, often w/ dolie incl, sme w/ brn brn o stn.

- 4710 – 4720 DOL (75%) off-wh, v lt tan (from o stn), micxl, hd, often dns, mot tan/wh mot apr due to patchy oil stn, scat p dev mic-suc por, bri yel flor where stn, fst stmg cut. CHT/QTZ (10%) trnsl clr wh, sme trip, com vf xl qtz xls, often w/ blk dd or lt brn o stn, 15% sh cvgs.
- 4720 – 4730 DOL (75%) similar to above, 50% w/ dk brn o stn, bri yel flor, fst stmg cut. CHT/QTZ (15%) similar to above, often w/ lt to dk o stn. 10% cvgs.
- Probable Osage Top
- 4730 – 4740 DOL (55%) off-wh, lt tan (from o stn), micxl, hd, sme p dev mic-suc por, all por w/ lt-m brn o stn, sme chty, 70% of all dol w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. CHT (30%) trnsl, wh, lt brn, sme w/ brn o stn. 5% lt to bri gn SH. 10% cvgs
- 4740 – 4750 DOL (70%) off-wh, tan, micxl w/ mntr vf xl, hd, scat patches of p dev mic-suc por, 60% w/ spty to even lt to dk brn o stn, bri yel flor, fst stmg cut. CHT (20%) trnsl, wh, mntr tan & lt brn, sme trip, sme w/ lt brn o stn. SH (10%) lt gn, dolic, sme chty.
- 4750 – 4760 DOL (55%) similar to above, 80% w/ spty to even lt brn o stn, bri yel flor, fst stmg cut. CHT (35%) trnsl, wh, tan, sme w/ lt brn o stn. SH (10%) lt gn, sme mot w/ lt red, dolic.
- 4760 – 4770 DOL (50%) tan, off-wh, micxl, hd, com patches of p dev mic-suc por, 80% of dol w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. CHT (40%) wh, trnsl, sme w/ dolic incl, sme w/ spty brn o stn. SH (10%) lt gn, dolic.
- 4770 – 4780 CHT (45%) wh, mntr trnsl, sme trip, scat spic, rr dol incl, occ w/ spty lt brn o stn. DOL (45%) off-wh, tan, micxl, hd, most dns, scat patchy p dev mic-suc por, most por w/ var lt to mod brn o stn, mod to bri yel flor, fst stmg cut. SH (10%) lt gy, mntr lt gy, sl dolic.
- 4780 – 4790 CHT (60%) as above, DOL (35%) as above, 90% of all dol w/ spty lt brn o stn, bri yel flor, fst stmg cut. SH (5%) pred lt gn, as above.
- 4790 – 4800 CHT (70%) wh, occ trnsl, loc trip, tr pyr. DOL (25%) off-wh, tan, micxl, hd, gen dns, occ mic-suc w/ lt to mod brn o stn, mod to bri yel flor, fr to gd fast stmg cut. SH (5%) lt gy-gn.
- 4800 – 4812 CHT (70%) & DOL (25%) gen as above. SH (5%) lt gy-gn.
- 7" Casing Set to 4812'.
- 4810 – 4820 CHT (70%) wh, trnsl, loc trip. DOL (25%) tan, off-wh, micxl, com micsuc w/ patchy to evn brn o stn, mod bri yel flor, slo stmg cuts, p mic-suc por. CMT (5%).

- 4820 – 4830 CHT (80%) & DOL (20%) gen as above.
- 4830 – 4840 CHT (80%) wh, trnsl, loc trip. DOL (20%) tan, occ off-wh, micxl, gen mic suc, tr gran w/ p intgr por, 80% w/ patchy brn o stn, bri yel flor, slo stmg cut.
- 4840 – 4850 CHT (70%) wh, occ trnsl, tr pyr. DOL (30%) tan, occ off-wh, micxl, gen mic-suc w/ lt brn o stn, bri yel flor, fr-gd slo stmg cuts, p to occ fr mic-suc por.
- 4850 – 4860 CHT (70%) wh, occ trnsl, tr pyr. DOL (30%) tan, occ off-wh, micxl, gen mic-suc w/ p to fr por & lt brn o stn, mod to bri yel flor, fr- gd stmg cuts.
- 4860 – 4870 CHT (70%) wh, occ trnsl, tr pyr. DOL (30%) tan, occ off-wh, micxl, gen mic-suc w/ p por & lt brn o stn, mod to bri yel flor, fr-gd stmg cuts.
- 4870 – 4880 CHT (75%) wh, occ trnsl, occ trip, rr pyr. DOL (25%) tan, occ of-wh, micxl, decr mic-suc, bcm hd & dns, 50% w/ p por & lt brn o stn, mod to bri yel flor, fr stmg cuts.
- 4880 – 4890 CHT (70%) wh, occ trnsl, tr trip. DOL (30%) tan, occ off-wh, micxl, com mic-suc, occ hd & dns, 70% w/ p to occ fr por & lt brn o stn, mod bri yel flor, fr stmg cuts.
- 4890 – 4900 CHT (60%) wh, occ trnsl, tr pyr. DOL (40%) tan, occ off-wh, micxl, gen mic-suc, occ hd & dns, 80% w/ p por & lt brn o stn, mod to bri yel flor, fr stmg cuts.
- 4900 – 4910 CHT (60%) & DOL (40%) gen as above.
- 4910 – 4920 CHT (60%) wh, occ trnsl, occ trip, tr pyr. DOL (40%) tan, off-wh, micxl, com mic-suc w/ p por & near evn brn o stn, bri yel flor, fr fast stmg cuts.
- 4920 – 4930 CHT (85%) wh, incr trnsl, tr trip, tr pyr. DOL (15%) off-wh, tan, micxl, pred hd & dns, occ mic-suc w/ p por & lt brn o stn, bri yel flor, slo stmg cuts.
- 4930 – 4940 CHT (75%) as above. DOL (25%) tan, off-wh, micxl, incr mic-suc w/ p por & brn o stn, bri yel flor, fr to gd fast stmg cuts.
- 4940 – 4950 CHT (60%) trnsl, wh, v lt gy, tr pyr. DOL (40%) tan, off-wh, micxl, com mic-suc w/ p por & patchy brn o stn, mod bri yel flor, slo stmg cuts.
- 4950 – 4960 CHT (60%) & DOL (40%) gen as above.

- 4960 – 4970 CHT (60%) trnsl, wh, occ v lt gy, tr pyr. DOL (40%) tan, off-wh, micxl, com mic-suc w/ p por & lt brn o stn, mod bri yel flor, fr fast stmg cuts.
- 4970 – 4980 CHT (50%) trnsl, wh, v lt gy, tr pyr. DOL (50%) tan, off-wh, micxl, occ hd & dns, com mic-suc w/ p por & patchy-near evn brn o stn, mod bri yel flor, fr slo to fast stmg cuts.
- 4980 – 4990 DOL (60%) tan, incr off-wh, micxl, com hd & dns, occ mic-suc w/ p por, decr patchy brn o stn, mod bri yel flor, fr slo stmg cuts. CHT (40%) trnsl, v lt gy, wh, tr pyr.
- 4990 – 5000 DOL (60%) & CHT (40%) gen as above.
- 5000 – 5010 DOL (60%) off-wh, tan, micxl, com hd & dns, occ mic-suc w/ p por & 50% spotty brn o stn, mod bri yel flor, fr stmg cuts. CHT (40%) trnsl, wh, tr pyr.
- 5010 – 5020 DOL (70%) off-wh, tan, micxl, incr hd & dns, occ mic-suc w/ p por & 40% spotty brn o stn, mod bri yel flor, fr slo stmg cuts. CHT (30%) as above. tr free Pyr.
- 5020 – 5030 DOL (60%) tan, off-wh, micxl, com hd & dns, occ mic-suc w/ p to occ fr por & 50% spotty brn o stn, mod bri yel flor, fr slo stmg cuts. CHT (40%) trnsl, wh.
- 5030 – 5040 DOL (50%) tan, off-wh, micxl, hd & dns i.p, com mic-suc w/ p to occ fr intxl por & 70% spotty brn o stn, mod bri flor, fr fast stmg cuts. CHT (50%) trnsl, wh, v lt gy, tr pyr.
- 5040 – 5050 DOL (50%) gen as above , incr fr intxl por w/ 70% brn o stn, bri yel flor, fr fast stmg cuts. CHT (50%) gen as above.
- 5050 – 5060 DOL (50%) tan, off-wh, micxl, hd, com p to mod dev mic-suc por, p to fr intxl por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. CHT (50%) wh, v lt gy, sme trnsl, tr w/ spty brn o stn.
- 5060 – 5070 DOL (50%) similar to above, CHT (50%) similar to above
- 5070 – 5080 CHT (60%) wh, v lt gy, trnsl, tr w/ spty brn o stn. DOL (40%) tan, off-wh, micxl, hd, com p to mod dev mic-suc por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut.
- 5080 – 5090 CHT (50%) wh, v lt gy, trnsl, tr w/ spty brn o stn. DOL (50%) tan, off-wh, micxl, hd, com p to mod dev mic-suc por, all vis por w/ var lt to mod brn o stn, tr w/ dk brn stn, bri yel flor, fst stmg cut.
- 5090 – 5100 CHT (60%) similar to above. DOL (40%) as above w/ incr in dk brn o stn.

- 5100 – 5110 CHT (60%) wh, v lt gy, mnr trnsl, tr w/ spty brn o stn. DOL (40%) tan, off-wh, micxl, hd, com p to mod dev mic-suc por, p to fr vis por, all vis por w/ var lt to dk brn o stn, incr in dk brn stn from previous, bri yel flor, fst stmg cut.
- 5110 – 5120 CHT (60%) similar to above. DOL (40%) similar to above w/ continued 40% of all stn dk brn.
- 5120 – 5130 CHT (60%) wh, v lt gy, mnr trnsl, tr dism pyr & arg incl, scat dolie incl, tr w/ spty brn o stn. DOL (40%) tan, off-wh, micxl, hd, com p to mod dev mic-suc por w/ var lt to dk brn o stn, about 40% of all stn is dk brn, bri yel flor, fst stmg cut.
- 5130 – 5140 CHT (55%) similar to above. DOL (45%) similar to above
- 5140 – 5150 CHT (60%) wh, v lt gy, mnr trnsl, tr dism pyr & arg incl, scat dolie incl, tr w/ spty brn o stn. DOL (40%) tan, off-wh, micxl, hd, com p to mod dev mic-suc por w/ var lt to dk brn o stn, about 40% of all stn is dk brn, bri yel flor, fst stmg cut.
- 5150 – 5160 CHT (60%) similar to above. DOL (40%) similar to above var lt to dk brn o stn w/ about 50% w/ dk brn stn.
- 5160 – 5170 CHT 60%) similar to above. DOL (40%) similar to above.
- 5170 – 5180 CHT (70%) off-wh, wh, trnsl, occ w/ dolie patch or incl, scat rmnt spic, tr w/ spty brn o stn. DOL (30%) tan, off-wh, micxl, hd, com patches of p to mod dev mic-suc por, all vis por w/ var lt to dk brn o stn, 50% of dol w/ dk brn o stn, v fnt odor, bri yel flor, fst stmg cut.
- 5180 – 5190 CHT (75%) similar to above. DOL (25%) tan, off-wh, similar to above, 60% of dol w/ dk brn o stn, v fnt odor, bri yel flor, fst stmg cut.
- 5190 – 5200 CHT (75%) similar to above. DOL (25%) similar to above.
- 5200 – 5210 CHT (70%) off-wh, wh, mnr trnsl, occ w/ dolie patch, rr dk incl. scat rmnt spic, tr w/ spty lt brn o stn. DOL (30%) tan, off-wh, micxl, hd, com patches of p to mod dev mic-suc por, all vis por w/ var lt to dk brn o stn, 60% of por w/ dk brn o stn, v fnt odor, bri yel flor, fst stmg cut.
- 5210 – 5220 CHT (70%) similar to above. DOL, (30%) as above.
- 5220 – 5230 CHT (70%) similar to above. DOL (30%) similar to above, 50% of por w/ dk brn o stn. v fnt odor, bri yel flor, fst stmg cut.

- 5230 – 5240 CHT (75%) off-wh, wh, mnr trnsl, scat rmnt spic, rr dolie incl, tr w/ spty lt brn o stn. DOL (25%) tan, off-wh, micxl, hd, scat patches of p to mod dev mic-suc por, all vis por w/ var lt to dk brn o stn, 50% of por w/ dk brn stn, bri yel flor, fst stmg cut.
- 5240 – 5250 CHT (75%) similar to above. DOL (25%) similar to above.
- 5250 – 5260 CHT (75%) similar to above. DOL (25%) similar to above.
- 5260 – 5270 CHT (70%) off-wh, wh, mnr trnsl, scat rmnt spic, rr dolie incl, rr dism pyr, sme w/ spty brn o stn. DOL (30%) tan, lt brn, off-wh, micxl, hd, com p to mod dev mic-suc por, p to fr vis por, all vis por w/ var lt to dk brn o stn, 40% of all por w/ dk brn o stn, bri yel flor, fst stmg cut.
- 5270 – 5280 CHT (70%) similar to above, DOL (30%) as above.
- 5280 – 5290 CHT (65%) similar to above. DOL (35%) as above.
- 5290 – 5300 CHT (70%) off-wh, wh, mnr trnsl, scat rmnt spic, rr dolie incl, rr dism pyr, sme w/ spty brn o stn. DOL (30%) tan, lt brn, off-wh, micxl, hd, com p to mod dev mic-suc por, p to fr vis por, all vis por w/ var lt to dk brn o stn, 40% of all por w/ dk brn o stn, bri yel flor, fst stmg cut.
- 5300 – 5310 CHT (70%) similar to above, DOL (30%) as above.
- 5310 – 5320 CHT (70%) similar to above, DOL (30%) as above.
- 5320 – 5330 CHT (75%) off-wh, wh, mnr trnsl, scat dolie incl, scat rmnt fos frags, rr pyr, sme w/ spty brn o stn. DOL (25%) tan, lt brn, off-wh, micxl, hd, com p to mod dev mic-suc por, p to fr vis por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut.
- 5330 – 5340 CHT (70%) similar to above. DOL (30%) similar to above.
- 5340 – 5350 CHT (70%) off-wh, wh, mnr trnsl, scat rmnt spic, occ dolie incl, rr pyr, tr w/ spty brn o stn. DOL (30%) tan, lt brn, off-wh, micxl, hd, scat p dev mic-suc por, mostly p vis por, all por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut.
- 5350 – 5360 CHT (70%) off-wh, wh, trnsl, com rmnt spic, tr spty brn o stn. DOL (30%) tan, off-wh, micxl, hd, occ mic-suc w/ p vis por & lt to dk brn o stn, bri yel flor, fr fast stmg cuts.
- 5360 – 5370 CHT (80%) off-wh, wh, trnsl, com rmnt spic, tr spty brn o stn. DOL (20%) tan, off-wh, micxl, hd, occ mic-suc w/ p vis por & lt to dk brn o stn, bri yel flor, fr fast stmg cuts.

- 5370 – 5380 CHT (75%) & DOL (25%) gen as above.
- 5380 – 5390 CHT (75%) wh, off-wh, trnsl, occ rmnt spic, tr brn o stn. DOL (25%) tan, off-wh, micxl, hd, occ mic-suc w/ p vis por & lt to dk brn o stn, mod bri yel flor, fr fast stmg cuts.
- 5390 – 5400 CHT (75%) & DOL (25%) gen as above.
- 5400 – 5410 CHT (70%) wh, off-wh, trnsl, tr brn o stn. DOL (30%) tan, off-wh, micxl, hd, occ dns, com mic-suc w/ p to fr vis por & abnt lt to dk brn o stn, bri yel flor, fr to g fast stmg cuts.
- 5410 – 5420 CHT (70%) & DOL (30%) gen as above. Rr tr gy-gn SH.
- 5420 – 5430 CHT (70%) as above. DOL (30%) tan, off-wh, micxl, hd, com mic-suc w/ p to fr vis por & abnt lt to dk brn o stn, bri yel flor, fr to g fst stmg cuts.
- 5430 – 5440 CHT (70%) & DOL (30%) gen as above.
- 5440 – 5450 CHT (75%) wh, off-wh, occ trnsl, tr brn o stn. DOL (25%) tan, off-wh, micxl, hd, com mic-suc w/ p to fr vis por & lt to dk brn o stn, bri yel flor, fr fst stmg cuts.
- 5450 – 5460 CHT (80%) wh, off-wh, tr trnsl. DOL (20%) tan, off-wh, micxl, hd, decr mic-suc w/ p to occ fr vis por & cont'd brn o stn, bri yel flor, fr slo to fst stmg cuts.
- 5460 – 5470 CHT (75%) wh, off-wh, tr brn o stn. DOL (25%) tan, off-wh, micxl, hd, com mic-suc w/ p vis por & cont'd brn o stn, bri yel flor, fr slo to fst stmg cuts.
- 5470 – 5480 CHT (75%) wh, off-wh, occ trnsl, rr tr brn o stn. DOL (25%) tan, off-wh, micxl, hd, com mic-suc w/ p vis por & decr brn o stn, fr slo stmg cuts.
- 5480 – 5490 CHT (80%) as above. DOL (20%) tan, off-wh, micxl, com mic-suc w/ p vis por & decr brn o stn, bri yel flor, fr slo stmg cuts.
- 5490 – 5500 CHT (80%) & DOL (20%) gen as above.
- 5500 – 5510 CHT (80%) wh, off-wh, occ trnsl, occ rmnt spic, tr trip. DOL (20%) lt tan, off-wh, micxl, hd, occ dns, com mic-suc w/ p vis por & decr brn o stn, bri yel flor, fr fst stmg cuts.
- 5510 – 5520 CHT (80%) & DOL (20%) gen as above.

- 5520 – 5530 CHT (80%) wh, off-wh, occ trnsl, tr trip & rmnt spic, tr brn o stn. DOL (20%) lt tan, off-wh, micxl, hd, occ dns, com mic-suc w/ v p vis por & spty brn o stn, bri yel flor, fr fst to slo stmg cuts.
- 5530 – 5540 CHT (85%) as above. DOL (15%) v lt tan, off-wh, micxl, hd, occ dns, com mic-suc w/ v p vis por & v spty brn o stn (occ unstn'd), mod bri yel flor, fr-p slo stmg cuts.
- 5540 – 5550 CHT (90%) off-wh, trnsl, wh, occ rmnt spic, tr brn o stn. DOL (10%) lt tan, occ off-wh, micxl, hd, occ mic-suc w/ v p vis por, occ brn o stn, mod bri yel flor, fr-p slo stmg cuts.
- 5550 – 5560 CHT (90%) & DOL (10%) gen as above.
- 5560 – 5570 CHT (90%) lt tan, off-wh, trnsl, occ rmnt spic, tr pyr, tr dk brn o stn. DOL (10%) v lt tan, off-wh, micxl, hd, com dns, tr mic-suc w/ v p vis por, occ dk brn o stn, mod bri yel flor, fr to p slo stmg cuts.
- 5570 – 5580 CHT (90%) & DOL (10%) gen as above.
- 5580 – 5590 CHT (90%) lt tan, off-wh, trnsl, occ rmnt spic, tr pyr & dk brn o stn. DOL (10%) v lt tan, off-wh, micxl, hd, occ dns, tr mic-suc w. v p vis por, occ dk brn o stn, mod bri yel flor, p to fr slo stmg cuts.
- 5590 – 5600 CHT (90%) & DOL (10%) gen as above.
- 5600 – 5610 CHT (90%) off-wh, lt tan, occ trnsl, occ rmnt spic, tr dk brn o stn, rr pyr. DOL (10%) v lt tan, off-wh, micxl, hd, occ dns, tr mic-suc w/ v p vis por, occ dk brn o stn, mod bri yel flor, p to fr slo stmg cuts.
- 5610 – 5620 CHT (90%) off-wh, lt tan, occ trnsl, occ rmnt spic, tr dk brn o stn. DOL (10%) v lt tan, off-wh, micxl, hd, occ dns, tr mic-suc w/ v p por, occ dk brn o stn, mod bri yel flor, p to occ fr stmg cuts.
- 5620 – 5630 CHT (70%) off-wh, lt tan, trnsl, occ rmnt spic, tr dk brn o stn. DOL (30%) lt tan off-wh, micxl, hd, com mic-suc w/ p to occ fr vis por & abnt spty brn o stn, bri yel flor, fr fst stmg cuts.
- 5630 – 5640 CHT (60%) as above. DOL (40%) lt tan, occ off-wh, micxl, hd, gen mic-suc w/ p to fr vis por & abnt spty brn o stn, bri yel flor, fr fst stmg cuts.
- 5640 – 5650 CHT (70%) trnsl, off-wh, occ rmnt spic, tr pyr. DOL (30%) lt tan, occ off-wh, micxl, hd, com mic-suc w/ p to fr vis por & abnt dk brn o stn, bri yel flor, fr fst stmg cuts. Tr gy-gn SH.
- 5650 – 5660 CHT (75%) & DOL (25%) gen as above.

- 5660 – 5670 CHT (70%) off-wh, trnsl, occ rmnt spic. DOL (30%) lt tan, occ off-wh, micxl, hd, com mic-suc w/ p to occ fr vis por & abnt m to dk brn o stn, bri yel flor, fr fst stmg cuts. Tr gy-gn SH.
- 5670 – 5680 CHT (70%) & DOL (30%) gen as above.
- 5680 – 5690 CHT (75%) off-wh, trnsl, occ rmnt spic, tr pyr. DOL (25%) tan, occ off-wh, micxl, hd, occ dns, gen mic-suc w/ p to occ fr vis por & abnt m brn o stn, bri yel flor, fr fst stmg cuts.
- 5690 – 5700 CHT (75%) & DOL (25%) gen as above.
- 5700 – 5710 CHT (75%) off-wh, trnsl, occ rmnt spic, tr dk brn o stn. DOL (25%) tan, occ off-wh, micxl, hd, gen mic-suc w/ fr to p vis por & abnt brn o stn, bri yel flor, fr fst stmg cuts.
- 5710 – 5720 CHT (70%) off-wh, trnsl, clr, occ rmnt spic, rr dk brn o stn. DOL (30%) tan, occ off-wh, micxl, hd, tr dns, gen mic-suc w/ fr to p vis por & abnt brn o stn, bri yel flor, g fst stmg cuts.
- 5720 – 5730 CHT (70%) off-wh, trnsl, scat rmnt spic, tr spty brn o stn. DOL (30%) tan, lt brn, off-wh, micxl, hd, com p to f dev mic-suc por w/ p to fr vis por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut.
- 5730 – 5740 CHT (75%) similar to above. DOL (25%) similar to above.
- 5740 – 5750 CHT (70%) similar to above. DOL (30%) similar to above.
- 5750 – 5760 CHT (75%) off-wh, trnsl, scat rmnt spic, occ dolie incl, tr spty brn o stn. DOL (25%) tan, lt brn, off-wh, micxl, hd, com p to f dev mic-suc por w/ p to fr vis por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut.
- 5760 – 5770 CHT (70%) similar to above. DOL (30%) similar to above.
- 5770 – 5780 CHT (75%) off-wh, trnsl, scat rmnt fos frags, occ dolie incl, tr w/ spty brn o stn. DOL (25%) tan, lt brn, off-wh, micxl, hd, com p to fr dev mic-suc por w/ fr to p vis por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut.
- 5780 – 5790 CHT (75%) similar to above. DOL (25%) similar to above.
- 5790 – 5800 CHT (75%) similar to above. DOL (25%) similar to above.
- 5800 – 5810 CHT (75%) similar to above. DOL (25%) similar to above.

- 5810 – 5820 CHT (75%) off-wh, trnsl, v lt gy, scat rmnt fos frags, rr dk incl, occ dolie incl, tr w/ spty brn o stn. DOL (25%) tan, lt brn, off-wh, micxl, hd, com p to fr dev mic-suc por w/ fr to p vis por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. tr gn SH (less than 1%)
- 5820 – 5830 CHT (75%) similar to above. DOL (25%) similar to above. tr mot gn/wh dolie SH (less than 1%)
- 5830 – 5840 CHT (70%) off-wh, trnsl, v lt gy, scat rmnt fos frags, rr dk incl, occ dolie incl, tr w/ spty brn o stn. DOL (30%) tan, lt brn, off-wh, micxl, hd, com p to fr dev mic-suc por w/ fr to p vis por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut.
- 5840 – 5850 CHT (70%) similar to above. DOL (30%) similar to above.
- 5850 – 5860 CHT (65%) off-wh, trnsl, v lt gy, scat rmnt fos frags, rr scat dk incl, sme dolie incl, tr w/ spty brn o stn. DOL (35%) tan, lt brn, off-wh, micxl, hd, scat p dev mic-suc por, all vis por w/ mostly lt to mod brn o stn, bri yel flor, fst stmg cut. tr gn SH.
- 5860 – 5870 CHT (60%) off-wh, trnsl, v lt gy, scat rmnt fos frags, rr scat dk incl, sme dolie incl, tr w/ spty brn o stn. DOL (40%) tan, lt brn, off-wh, micxl, hd, scat p dev mic-suc por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. tr gn SH.
- 5870 – 5880 CHT (60%) similar to above. DOL (39%) similar to above, SH (1%) gn, mot gn/wh, dolie, frm, wxy.
- 5880 – 5890 CHT (60%) off-wh, trnsl, v lt gy, scat rmnt fos frags, rr scat dk incl, sme dolie incl, tr w/ spty brn o stn. DOL (39%) tan, lt brn, off-wh, micxl, hd, scat p dev mic-suc por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. SH (1%) gn, mot gn/wh, dolie, frm, wxy.
- 5890 – 5900 DOL (50%) tan, v lt brn, off-wh, micxl, hd, com patches of p dev mic-suc por, all vis por w/ mostly lt to mod brn o stn, bri yel flor, fst stmg cut. CHT (49%) off-wh, trnsl, v lt gy, scat rmnt fos frags, sme w/ dolie incl, tr w/ spty brn o stn. SH (1%) mot gn & wh, dolie, wxy
- 5900 – 5910 DOL (50%) similar to above, CHT (49%) similar to above, SH (1%) mot gn/wh, dolie, wxy.
- 5910 – 5920 CHT (70%) wh, off-wh, trnsl, scat rmnt fos frags, tr w/ brn o stn. DOL (30%) tan, lt brn, off-wh, micxl, hd, com p dev mic-suc por, most w/ lt brn o stn. mod to bri yel flor, mod to fst stmg cut. tr gn SH.
- 5920 – 5930 CHT (80%) wh, off-wh, trnsl, com rmnt fos frag, sme w/ dolie incl, tr w/ spty brn o stn. DOL (20%) tan, lt brn, off-wh, micxl, scat p-fr dev mic-suc por, var lt to dk brn o stn, bri yel flor, fst stmg cut. tr mot gn/wh SH.

- 5930 – 5940 CHT (80%) similar to above, DOL (20%) similar to above w/ sl decr in dk brn o stn. tr gn SH.
- 5940 – 5950 CHT (75%) wh, off-wh, trnsl, com rmnt fos frag, sme w/ dolie incl, tr w/ spty brn o stn. DOL (25%) tan, lt brn, off-wh, micxl, scat p-fr dev mic-suc por, var lt to dk brn o stn, bri yel flor, fst stmg cut. tr mot gn/wh SH.
- 5950 – 5960 CHT (75%) & DOL (25%) gen as above.
trip bit @ 5968'.
- 5960 – 5970 L.A.T. CHT (80%) wh, off-wh, trnsl, com rmnt fos frags, tr w/ spty brn o stn. DOL (20%) tan, occ off-wh, micxl, com mic-suc w/ p to fr vis por & brn o stn, bri yel flor, fr fst stmg cuts.
- 5970 – 5980 CHT (80%) wh, off-wh, trnsl, tr lt gy, tr rmnt fos frags, tr brn o stn. DOL (20%) tan, occ off-wh, micxl, com mic-suc w/ p to fr vis por & brn o stn, bri yel flor, fr fst stmg cuts. tr SH lt gn, mot, mica.
- 5980 – 5990 CHT (85%) & DOL (15%) gen as above.
- 5990 – 6000 CHT (85%) off-wh, wh, occ trnsl, tr rmnt spic, tr brn o stn. DOL (15%) tan, occ off-wh, micxl, hd, occ dns, gen mic-suc w/ p-fr vis por & brn o stn, bri yel flor, fr fst stmg cuts. tr gn SH.
- 6000 – 6010 CHT (85%) as above. DOL (15%) incr dns w/ spty brn o stn. tr gn SH.
- 6010 – 6020 CHT (85%) wh, off-wh, trnsl. DOL (15%) tan, occ off-wh, micxl, hd, com dns, occ mic-suc w p vis por & brn o stn, bri yel flor, fr fst stmg cuts.
- 6020 – 6030 CHT (90%) & DOL (10%) gen as above.
- 6030 – 6040 CHT (90%) wh, off-wh, occ trnsl, tr pyr. DOL (10%) tan, occ off-wh, micxl, hd, occ dns, gen mic-suc w/ p vis por & brn o stn, bri yel flor, fr fst stmg cuts. tr gn SH.
- 6040 – 6050 CHT (90%) & DOL (10%) gen as above.
- 6050 – 6060 CHT (90%) off-wh, wh, occ trnsl, tr rmnt fos frags & pyr. DOL (10%) tan, occ off-wh, micxl, hd occ dns, com mic-suc w/ p-occ fr vis por & spty brn o stn, bri yel flor, fr fst stmg cuts. tr gn SH.
- 6060 – 6070 CHT (90%) & DOL (10%) gen as above.

- 6070 – 6080 CHT (95%) off-wh, wh, trnsl, occ rmnt fos frags, tr pyr & brn o stn. DOL (5%) as above, gen mic-suc w/ p-fr vis por & brn o stn, bri yel flor, fr fst stmg cuts. tr gn SH.
- 6080 – 6090 CHT (90%) off-wh, wh, trnsl, tr lt gy, occ rmnt fos frags, tr arg str & pyr. DOL (10%) tan, occ off-wh, micxl, hd, occ dns, gen mic-suc w/ p-fr vis por & brn o stn, bri yel flor, fr fst stmg cuts. tr gn SH.
- 6090 – 6100 CHT (85%) wh, off-wh, trnsl, tr arg str. DOL (15%) tan, occ off-wh, micxl, occ dns, gen mic-suc w/ p-fr vis por & brn o stn, bri yel flor, fr-g fst stmg cuts. tr gn SH.
- 6100 – 6110 CHT (85%) & DOL (15%) gen as above.
- 6110 – 6120 CHT (75%) wh, off-wh, occ trnsl, occ pyr, tr arg str. DOL (25%) tan, occ off-wh, micxl, gen mic-suc w/ fr vis por & abnt brn o stn, bri yel flor, g fst stmg cuts.
- 6120 – 6130 CHT (70%) & DOL (30%) gen as above.
- 6130 – 6140 CHT (75%) wh, off-wh, occ trnsl, occ arg str, tr pyr. DOL (25%) tan, occ off-wh, micxl, frm-hd, gen mic-suc w/ fr-p vis por & brn o stn, bri yel flor, g fst stmg cuts.
- 6140 – 6150 CHT (70%) wh, trnsl, off-wh, occ arg str, tr pyr. DOL (30%) tan occ off-wh, micxl, gen mic-suc w/ p-fr vis por & brn o stn, bri yel flor, g fst stmg cuts.
- 6150 – 6160 CHT (55%) wh, off-wh, trnsl, scat rmnt fos frags, occ dolie incl, tr pyr, tr spty brn o stn. DOL (45%) tan, lt brn, off-wh, micxl, hd, abnt p to mod dev mic-suc por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. tr mot gn & wh SH.
- 6160 – 6170 CHT (60%) similar to above. DOL (40%) similar to above.
- 6170 – 6180 CHT (65%) similar to above. DOL (35%) similar to above.
- 6180 – 6190 CHT (60%) wh, off-wh, trnsl, scat rmnt fos frags, occ dolie incl, tr pyr & dk incl, tr spty brn o stn. DOL (40%) tan, lt brn, off-wh, micxl, hd, abnt p to mod dev mic-suc por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. tr mot gn & wh SH.
- 6190 – 6200 CHT (60%) similar to above. DOL (40%) similar to above w/ incr in spty dk brn o stn to 30%. tr mot gn & wh SH.
- 6200 – 6210 CHT (60%) similar to above. DOL (40%) as above w/ continued 30% w/ spty dk brn o stn. tr mot gn & wh SH.

- 6210 – 6220 CHT (55%) wh, off-wh, trnsl, scat rmnt fos frags, sme dolie incl, rr pyr & dk incl, tr w/ spty brn o stn. DOL (45%) tan, lt brn, off-wh, com p dev mic-suc por, all vis por w/ var mostly lt to mod brn o stn, bri yel flor, fst stmg cut. tr mot gn & wh SH.
- 6220 – 6230 CHT (55%) similar to above. DOL (45%) similar to above. tr gn SH.
- 6230 – 6240 CHT (55%) similar to above. DOL (45%) similar to above. tr gn SH.
- 6240 – 6250 CHT (60%) wh, off-wh, trnsl, com rmnt fos frags, occ dolie incl, rr pyr & dk incl, tr w/ spty lt brn o stn. DOL (40%) tan, v lt brn, off-wh, com p dev mic-suc por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. tr mot gn & wh SH.
- 6250 – 6260 CHT (60%) similar to above. DOL (40%) similar to above. tr gn SH.
- 6260 – 6270 CHT (60%) similar to above. DOL (40%) similar to above. tr gn SH.
- 6270 – 6280 CHT (55%) wh, off-wh, trnsl, com rmnt fos frags, occ dolie incl, rr pyr & dk incl, tr w/ spty lt brn o stn. DOL (45%) tan, v lt brn, off-wh, com p to fr dev mic-suc por, all vis por w/ var lt to dk brn o stn, bri yel flor, fst stmg cut. tr mot gn & wh SH.
- 6280 – 6290 CHT (60%) similar to above. DOL (40%) similar to above. tr gn SH.
- 6290 – 6300 CHT (60%) wh, off-wh, trnsl, com rmnt fos frags, occ dolie incl, rr pyr & dk incl, tr w/ spty lt brn o stn. DOL (40%) tan, v lt brn, off-wh, com p to fr dev mic-suc por, all vis por w/ var lt to dk brn o stn, v fnt odor, bri yel flor, fst stmg cut. tr mot gn & wh SH.
- 6300 – 6310 CHT (55%) similar to above, scat dk & tr gn incl. DOL (45%) similar to above. tr gn SH.
- 6310 – 6320 CHT (55%) wh, off-wh, trnsl, com rmnt fos frags, occ dolie incl, rr pyr, scat dk arg & rr gn incl, tr w/ spty lt brn o stn. DOL (45%) tan, v lt brn, off-wh, com p to fr dev mic-suc por, all vis por w/ var lt to dk brn o stn, sl incr in dk stn from previous, bri yel flor, fst stmg cut. tr mot gn/wh SH.
- 6320 – 6330 CHT (60%) wh, off-wh, trnsl, com rmnt fos frags, occ dolie incl, rr pyr, scat dk arg incl, tr w/ spty lt brn o stn. DOL (40%) tan, v lt brn, off-wh, com p to fr dev mic-suc por, all vis por w/ var lt to dk brn o stn, appox 30% of por w/ spty dk stn, bri yel flor, fst stmg cut. tr mot gn/wh SH.
- 6330 – 6340 CHT (55%) similar to above. DOL (45%) similar to above. tr gn SH.
- 6340 – 6350 CHT (55%) similar to above.. DOL (45%) similar to above w/ mostly p dev mic-suc por. tr gn SH.

- 6350 – 6360 CHT (55%) wh, off-wh, trnsl, com rmnt fos frags, occ dolie incl, rr pyr, scat dk arg incl, tr w/ spty lt brn o stn. DOL (45%) tan, v lt brn, off-wh, mostly p dev mic-suc por, all vis por w/ var lt to mod brn o stn, decr in dk o stn from previous, mod to bri yel flor, fst stmg cut. tr mot gn/wh SH.
- 6360 – 6370 CHT (60%) similar to above. DOL (40%) similar to above w/ sl incr in dk brn o stn from above.
- 6370 – 6380 CHT (60%) similar to above.. DOL (40%) similar to above w/ mostly p dev mic-suc por, var lt to rr dk brn o stn. tr gn SH.
- 6380 – 6390 CHT (60%) wh, off-wh, trnsl, com rmnt fos frags, occ dolie incl, rr pyr, rr dk & gn incl, tr w/ spty lt brn o stn. DOL (40%) tan, v lt brn, off-wh, mostly var p to mod dev mic-suc por, all vis por w/ var lt to dk brn o stn, mostly bri yel flor, fst stmg cut. tr mot gn/wh SH.
- 6390 – 6400 CHT (60%) wh, off-wh, trnsl, com rmnt fos frags, occ dol incl, tr spty brn o stn. DOL (40%) tan, off-wh, micxl, com dns, com mic-suc w/ p vis por & spty brn o stn, bri yel flor, fr fst stmg cuts. tr gn SH.
- 6400 – 6410 CHT (70%) & DOL (30%) gen as above.
- 6410 – 6420 CHT (65%) wh, off-wh, trnsl, tr trip, tr brn o stn. DOL (35%) tan, off-wh, micxl, occ dns, gen mic-suc w/ p vis por & brn o stn, bri yel flor, fr fst stmg cut.
- 6420 – 6430 CHT (70%) & DOL (30%) gen as above.
- 6430 – 6440 CHT (65%) wh, off-wh, trnsl, tr trip, tr brn o stn. DOL (35%) tan, off-wh, micxl, occ dns, gen mic-suc w/ p vis por & brn o stn, bri yel flor, fr fst stmg cut.
- 6440 – 6450 CHT (60%) wh, off-wh, trnsl, tr trip, tr brn o stn. DOL 40%) lt tan, off-wh, micxl, hd, occ dns, gen mic-suc w/ p vis por & brn o stn, bri yel flor, fr slo stmg cuts.
- 6450 – 6460 CHT (60%) & DOL (40%) gen as above.
- 6460 – 6470 CHT (55%) wh, off-wh, occ trnsl, com rmnt fos frags, tr pyr & brn o stn. DOL (45%) lt tan, occ off-wh, micxl, hd, occ dns, com mic-suc w/ p vis por & lt-m brn o stn, bri yel flor, fr slo stmg cuts.
- 6470 – 6480 CHT (60%) & DOL (40%) gen as above.

- 6480 – 6490 CHT (60%) wh, off-wh, trnsl, com rmnt fos frags. DOL (40%) lt tan-tan, occ off-wh, micxl, hd, occ dns, pred mic-suc w/ p-occ fr vis por & lt-m brn o stn, bri yel flor, fr fst stmg cuts.
- 6490 – 6500 CHT (70%) wh, off-wh, loc trnsl, com rmnt fos frags. DOL (30%) tan, occ off-wh, micxl, hd, occ dns, gen mic-suc w/ p-fr vis por & m brn o stn, bri yel flor, fr fst stmg cuts. tr gn SH.
- 6500 – 6510 CHT (80%) wh, off-wh, occ rmnt fos frags. DOL (20%) tan, occ off-wh, micxl, hd, occ dns, gen mic-suc w/ p vis por & brn o stn, bri yel flor, fr fst stmg cuts.
- 6510 – 6520 CHT (85%) & DOL (15%) gen as above.
- 6520 – 6530 CHT (80%) & DOL (20%) gen as above. tr gn SH.
- 6530 – 6540 CHT (80%) wh, off-wh, trnsl, occ trip, tr brn o stn. DOL (20%) lt tan, occ off-wh, micxl, occ dns, gen mic-suc w/ p-occ fr vis por & lt-m brn ostn, bri yel flor, fr slo stmg cuts.
- 6540 – 6550 CHT (80%) & DOL (20%) gen as above.
- 6550 – 6560 CHT (85%) wh, off-wh, trnsl, tr v lt gy, occ rmnt fos frags, tr arg str & pyr. DOL (15%) lt tan-tan, occ off-wh, micxl, hd, occ dns, gen mic-suc w/ p-occ fr vis por & lt brn o stn, bri yel flor, fr slo stmg cuts.
- 6560 – 6570 CHT (80%) wh, trnsl, off-wh, com rmnt fos frags, tr arg incl & dk brn o stn. DOL (20%) lt tan, occ off-wh, micxl, hd, com dns, occ mic-suc w/ p vis por & lt brn o stn, bri yel flor, fr slo stmg cuts.
- 6570 – 6580 CHT (70%) wh, trnsl, off-wh, lt gy, com rmnt fos frags, tr arg incl & pyr. DOL 30%) tan, off-wh, micxl, hd-frm, occ dns, gen mic-suc w/ fr-p vis por & m brn o stn, bri yel flor, g fst stmg cuts.
- 6580 – 6590 CHT (70%) as above. DOL (30%) gen as above, also com chlor? incl.
- 6590 – 6600 CHT (70%) wh, trnsl, clr, tr gy, occ arg incl, tr rmnt fos frags, tr trip. DOL (30%) tan, off-wh, micxl, hd-frm, incr dns, pred mic-suc w/ p-occ fr vis por & brn o stn, bri yel flor, fr fst stmg cuts. tr gn SH.
- 6600 – 6610 CHT (75%) as above, occ chlor incl, tr pyr. DOL (25%) tan, off-wh, micxl, hd-frm, occ dns, gen mic-suc w/ p-occ fr vis por & brn o stn, bri yel flor, fr fst stmg cuts.
- 6610 – 6620 CHT (75%) & DOL (25%) gen as above.

- 6740 – 6750 DOL (60%) off-wh, tan, mnr lt brn, micxl, hd, var dns to fr dev mic-suc por, most por w/ var lt to mnr dk brn o stn. CHT (35%) similar to previous. QTZ (3%) clr, prob from shattered sd grs, SH (2%) pred mot gn/wh.
- 6750 – 6760 DOL (60%) off-wh, tan, mnr lt brn, micxl, hd, var dns to fr dev mic-suc por, most por w/ var lt to mnr dk brn o stn. CHT (25%) similar to previous. QTZ (10%) clr, prob from shattered sd grs, SH (5%) pred mot gn/wh, tr lt red.
- 6760 – 6770 DOL (55%) off-wh, tan, mnr lt brn, micxl, hd, var dns to fr dev mic-suc por, most por w/ var lt to mnr dk brn o stn. CHT (30%) similar to previous. QTZ (10%) clr, prob from shattered sd grs, SH (5%) pred mot gn/wh.
- 6770 – 6780 DOL (55%) off-wh, tan, mnr lt brn, micxl, hd, mostly dns, sme p dev mic-suc por, most por w/ var lt to mnr dk brn o stn. CHT (25%) similar to previous. QTZ (10%) clr, prob from shattered sd grs, SH (10%) pred mot gn/wh, tr lt red, dolie, sme pyric.
- 6780 – 6790 DOL (55%) off-wh, mnr tan, micxl, hd, mostly dns, sme p dev mic-suc por, about 50% of por w/ mostly lt to brn o stn. CHT (30%) similar to previous, occ trip. QTZ (10%) clr, prob from shattered sd grs, SH (5%) pred mot gn/wh, tr lt red, dolie, sme pyric.
- 6790 – 6800 DOL (60%) off-wh, yel-wh, mnr tan, micxl, hd, mostly dns, mnr p dev mic-suc por, about 30% of por w/ mostly lt brn o stn. CHT (25%) similar to previous, occ trip, v rr lt brn o stn. QTZ (5%) clr, ang, pos from shattered sd grs or void fill, SH (10%) pred mot gn/wh, v rr lt red, dolie, sme pyric.
- 6800 – 6810 DOL (55%) off-wh, yel-wh, mnr tan, micxl, hd, mostly dns, mnr p dev mic-suc por, about 20% of por w/ mostly lt brn o stn. CHT (20%) similar to previous, occ trip, v rr lt brn o stn. SH (15%) pred mot gn/wh, dolie, sme pyric, QTZ (10%) clr, ang, pos from shattered sd grs or void fill,
- 6810 – 6820 DOL (55%), similar to above, mostly dns & barren. SH (20%) lt gn or mot gn/wh, com dism pyr. CHT (15%) similar to above., QTZ (10%) clr, trnsl, ang, pos from void fill mat or shattered clr qtz sd grs.
- 6820 – 6830 DOL (45%) off-wh, yel-wh, tr tan, 90% dns & barren, tr w/ v p dev mic-suc por & v lt brn o stn, mod yel flor, slo stmg cut. SH (30%) gn, most mot gn/wh, frm to sft, dolie, scat dism pyr. CHT (15%) off-wh, wh, trnsl. QTZ (10%) clr, ang, pos void fill mat or shattered clr sd grs.
- 6830 – 6840 DOL (55%) off-wh, yel-wh, tr tan, 90% dns & barren, tr w/ v p dev mic-suc por & v lt brn o stn, mod yel flor, slo stmg cut. SH (30%) gn, most gn/wh, frm to sft, dolie, scat dism pyr. CHT (10%) off-wh, wh, trnsl. QTZ (10%) clr, ang, pos void fill mat or shattered clr sd grs.

6840 – 6850

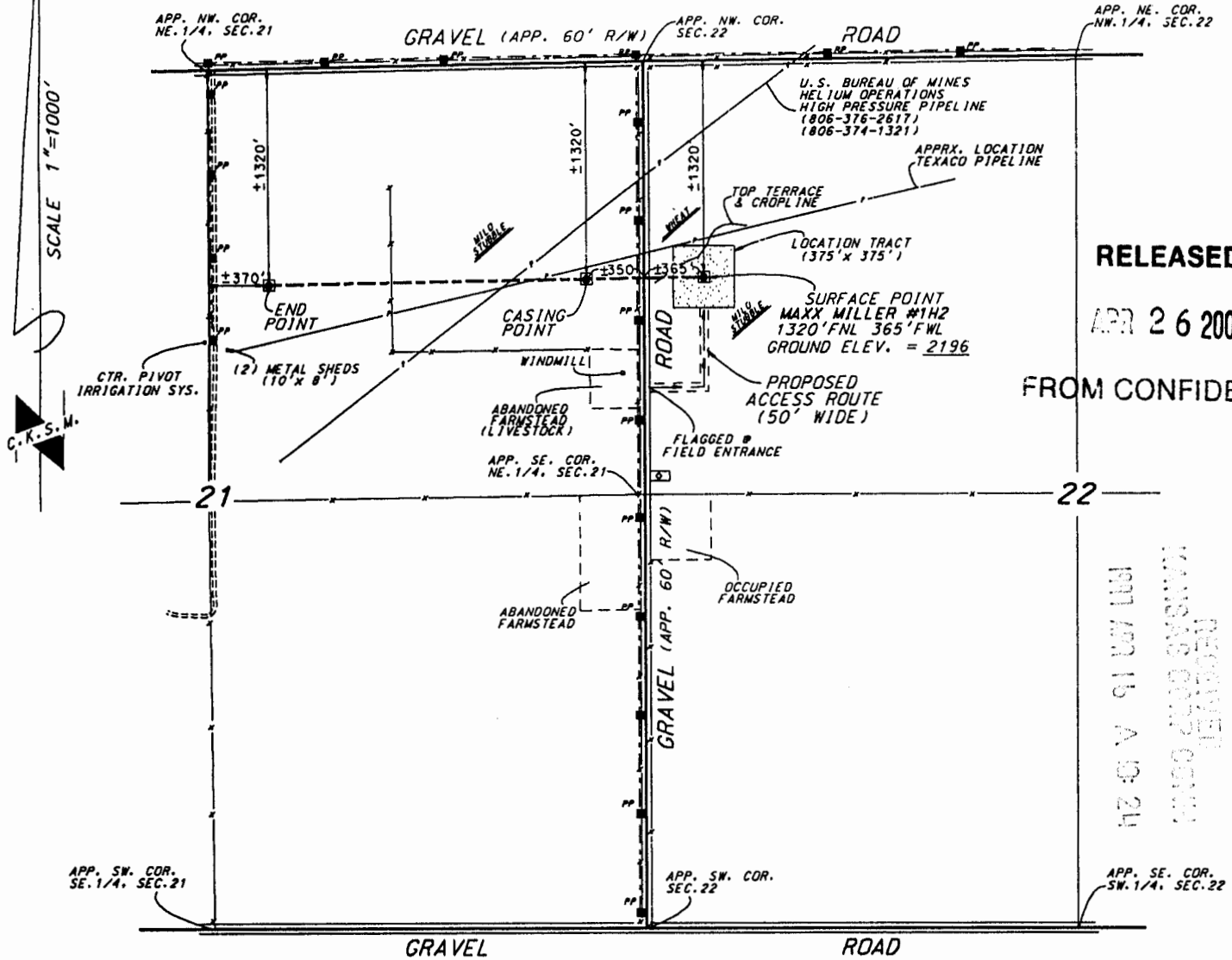
DOL (60%) off-wh, mnr yel-wh, tr tan, 90% dns & barren, tr w/ v p dev mic-suc por & v lt brn o stn, mod yel flor, slo stmg cut. SH (25%) gn, most mot gn/wh, frm to sft, dolie, scat dism pyr. CHT (10%) off-wh, wh, trnsl. QTZ (5%) clr, ang, pos void fill mat or shattered clr sd grs

6850 – 6856

Sample similar to above w/ SH decr to 20%, DOL incr to 65%. most dns, mnr p dev mic-suc por w/ lt to mod brn o stn, mod to bri yel flor, slo stmg cut.

Driller's TD 6856'

MAXX PETROLEUM, LTD.
 MAXX MILLER LEASE
 SECTIONS 21 & 22, T22S, R22W
 HODGEMAN COUNTY, KANSAS



RELEASED

APR 26 2000

FROM CONFIDENTIAL

RECEIVED
 KANSAS DEPT. OF REVENUE
 1997 APR 19 A 10:24

LEGEND

- ☐ TANK BATTERY
- FENCE
- ELECTRIC POWER LINE
- POWER POLE
- ==== LEASE ROAD

NOTES

1. Set metal stake @ surface point.
2. Set metal stakes @ tract corners & proposed access route.
3. All flagging Red & Yellow.
4. Overhead power available @ N. and E. line of Sec. 21 and @ N. line of Sec. 22 and other locations in Sections 21 & 22.
5. Kansas One Call System Inc. should be notified before excavation (1-800-344-7233).
6. CAUTION: Underground telephone @ N. and E. line of Sec. 21 (United Tele. Assoc. 1-800-34-7233 or 1-316-227-8641).
7. CAUTION: Various pipelines in Sections 21 & 22.
8. Surface point falls in milo stubble. Tract falls in wheat & milo stubble.
9. Approx. length of proposed 50' wide access route as shown from App. county road R/W line to location tract = ±815'

VERTICAL & HORIZONTAL DATA

BENCHMARK: TOP BRASS CAP IN CONC. ±300' N. & ±30' E. OF APP. SW. COR. SEC. 17-22S-22W STAMPED U.S. DEPT. OF INT. GEOLOGICAL SURVEY 13 RPA 1968 ELEV. = 2283

* ALL ELEVATIONS AS SHOWN ARE TO NEAREST FOOT.

GROUND ELEVATION: 2196

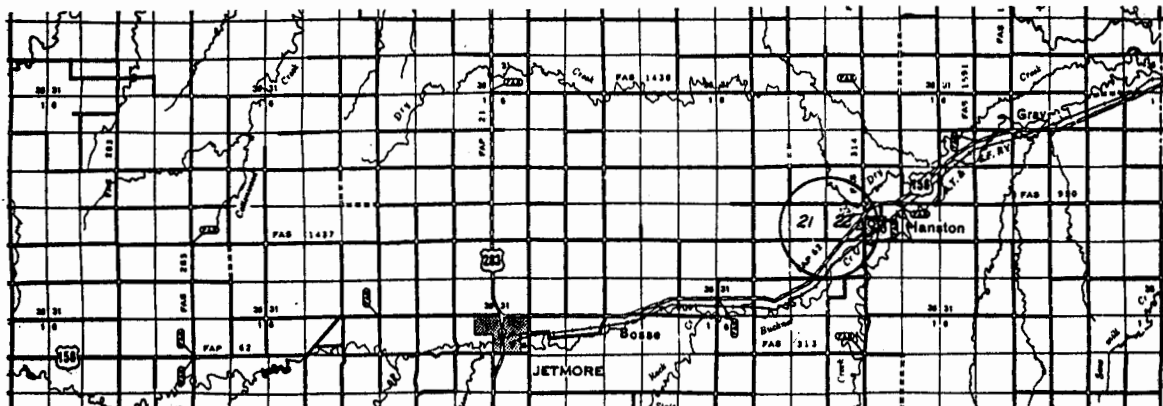
SURFACE POINT: 1320' FNL 365' FWL (SEC. 22)

CASING POINT: 1320' FNL 350' FEL

END POINT: 1320' FSL 2290' FEL

SITE TRACT: NE. COR. 2196
 NW. COR. 2194
 SW. COR. 2197
 SE. COR. 2196

ACREAGE: Site Tract = 140,625 SQ. FT. or ±3.2 acres
 Access Route = 40,750 SQ. FT. or ±0.9 acre
 ±4.1 acres total



* Controlling data is based upon the best maps and photographs available to us and upon a regular section of land containing 640 acres.

* Approximate section lines were determined using the normal standard of care of oilfield surveyors practicing in the state of Kansas. The section corners, which establish the precise section lines, were not necessarily located, and the exact location of the drill site location in the section is not guaranteed.

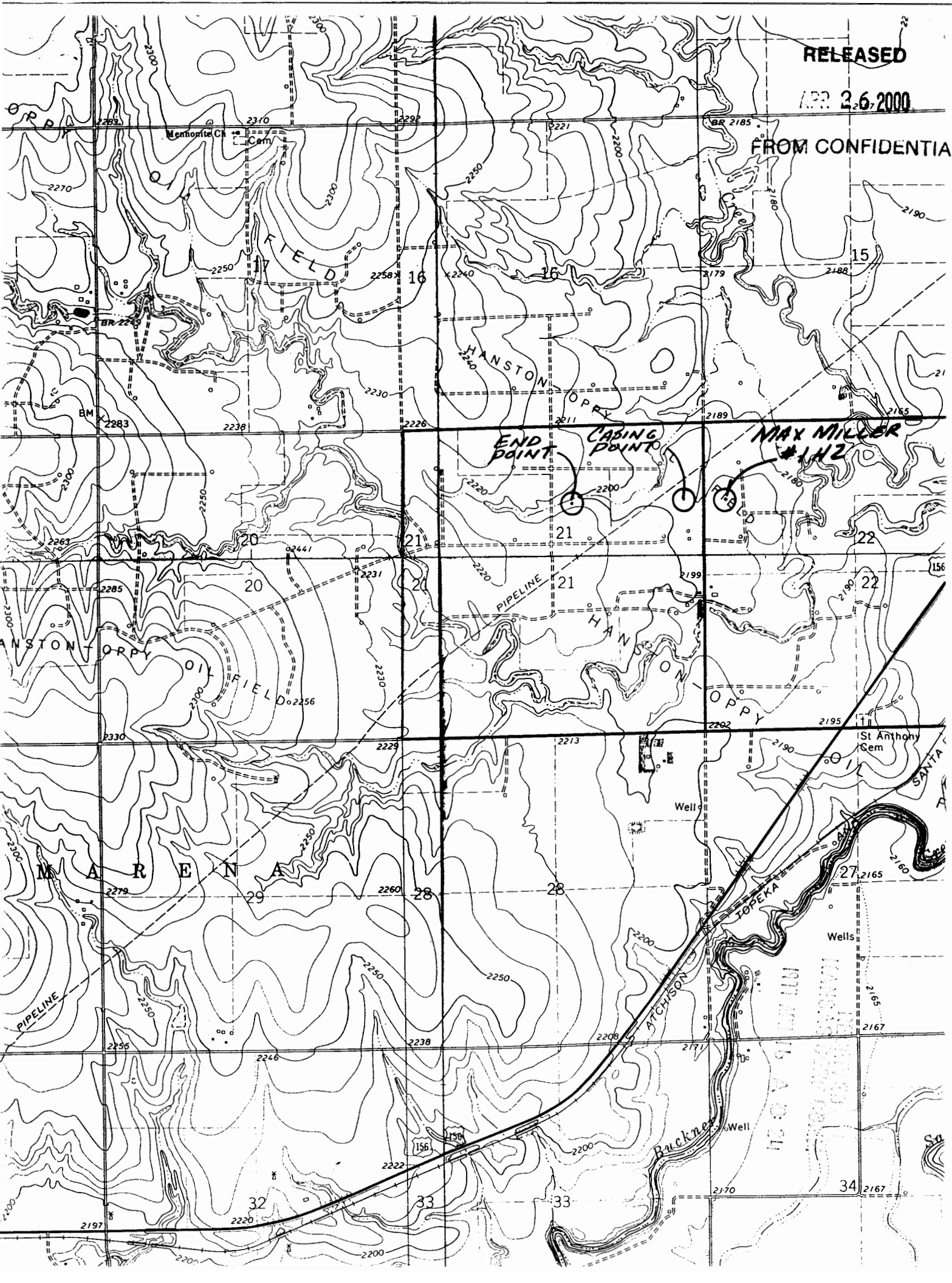
* Elevations derived from National Geodetic Vertical Datum.

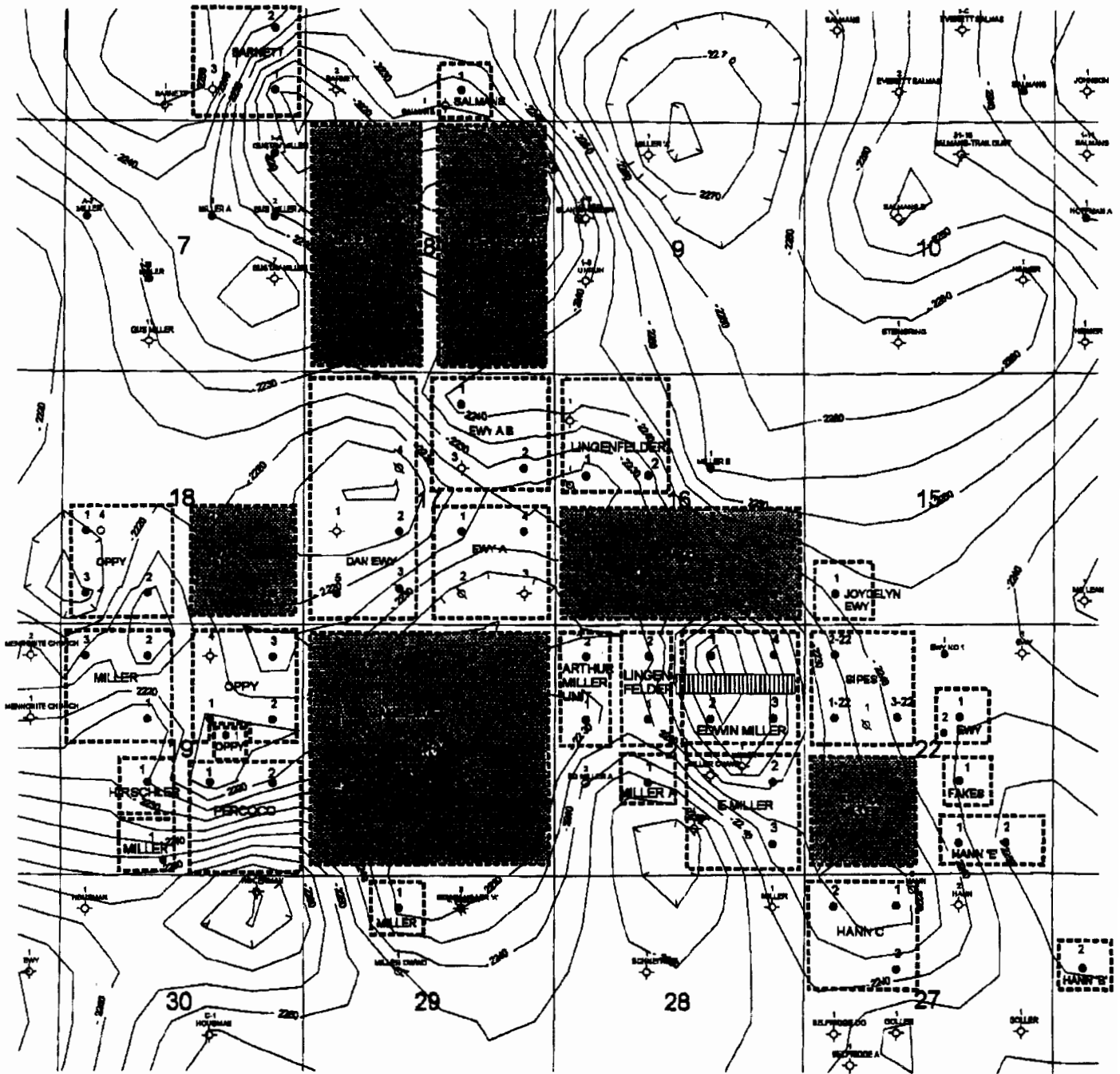
Date MARCH 27, 1997

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199 3-6-2000

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Horizontal well location NE sec 21

RELEASED

APR 26 2000

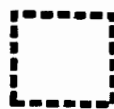
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T22S/R22W

Hanston-Oppy Field



Producing Lease



Non-Producing Lease



Horizontal Well Location

Contours:
Mississippian Subsea

RELEASED

APR 26 2000

FROM CONFIDENTIAL

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

ATTN

DAVE LAPINSKIE

*Max Billings Hz 1
25-22-23W*

ORIGINAL

Customer ... : BURIED HILLS PROD CO
Platform ... : A
Slot/Well ... : 1 /BILLINGS 18T

CONFIDENTIAL

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00
587.25	0.40	95.40	587.25	0.19 S	2.04 E	-0.17	0.07
1053.39	1.10	23.90	1053.35	3.74 N	5.47 E	-4.64	0.22
1505.49	0.50	218.10	1505.43	6.16 N	6.01 E	-7.11	0.35
1957.59	1.20	94.00	1957.50	4.28 N	9.52 E	-5.87	0.34
2409.70	0.80	219.40	2409.57	1.51 N	12.24 E	-3.61	0.40
2871.15	0.90	220.10	2870.97	3.75 S	7.86 E	2.33	0.02
3346.65	0.60	211.10	3346.43	8.74 S	4.17 E	7.88	0.07
3822.15	1.10	237.60	3821.88	13.32 S	0.97 W	13.29	0.13
3900.00	1.60	241.00	3899.71	14.25 S	2.55 W	14.47	0.65
3947.31	2.10	235.50	3946.99	15.06 S	3.84 W	15.50	1.12
3979.13	5.60	213.80	3978.74	16.68 S	5.19 W	17.33	11.72
4010.86	9.10	200.60	4010.20	20.32 S	6.93 W	21.21	12.18
4042.54	14.10	197.80	4041.23	26.34 S	9.00 W	27.50	15.88
4074.20	17.00	190.20	4071.73	34.57 S	11.00 W	35.95	11.18
4105.93	20.00	199.30	4101.82	44.26 S	13.61 W	45.95	13.10
4137.62	21.60	199.30	4131.44	54.88 S	17.33 W	57.06	5.05
4169.33	23.90	198.40	4160.69	66.48 S	21.29 W	69.17	7.34
4201.01	25.70	197.90	4189.44	79.11 S	25.42 W	82.33	5.72
4232.61	26.70	192.80	4217.80	92.56 S	29.10 W	96.21	7.79
4264.58	27.70	185.40	4246.24	106.96 S	31.40 W	110.79	11.03
4296.34	31.60	187.60	4273.84	122.57 S	33.19 W	126.47	12.75
4327.92	34.00	184.70	4300.38	139.57 S	35.01 W	143.53	9.08
4359.77	36.40	184.70	4326.27	157.84 S	36.42 W	161.70	7.50
4391.52	39.20	179.30	4351.50	177.31 S	37.00 W	181.04	12.91
4431.97	42.50	180.90	4382.09	203.76 S	37.06 W	207.10	8.56
4463.71	46.00	182.10	4404.82	225.90 S	37.64 W	229.00	11.34
4478.00	47.50	184.00	4414.61	236.29 S	38.20 W	239.33	14.28
4493.93	49.30	184.20	4425.19	248.17 S	39.05 W	251.18	11.34
4525.58	54.90	186.00	4444.63	273.04 S	41.28 W	276.05	18.25
4557.16	59.90	187.90	4461.64	299.43 S	44.52 W	302.61	16.62
4588.97	64.70	191.80	4476.42	327.16 S	49.35 W	330.76	18.58
4620.72	68.50	194.40	4489.03	355.53 S	55.96 W	359.85	14.13
4652.47	70.80	193.40	4500.07	384.43 S	63.11 W	389.54	7.82
4684.25	74.90	194.40	4509.44	413.90 S	70.41 W	419.83	13.25
4716.06	79.60	192.50	4516.46	444.06 S	77.62 W	450.79	15.88
4747.79	83.60	193.50	4521.10	474.64 S	84.68 W	482.13	12.99
4754.00	83.90	193.50	4521.77	480.64 S	86.12 W	488.30	4.83

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NOV 20 1997

CONSERVATION DIVISION
WICHITA, KS

NOV

NOV 20

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APR 26 2000

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

ORIGINAL

Customer .. FROM CONFIDENTIAL
Platform ... : A
Slot/Well .. : 1 /BILLINGS 1ST

CONFIDENTIAL

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FBRT	EASTINGS FBRT	VERTICAL SECTION	DOG LBG
4812.00	86.00	192.00	4526.88	536.99 S	98.87 W	546.00	4.44
4827.70	88.20	193.20	4527.67	552.29 S	102.29 W	561.66	15.96
4859.46	93.10	192.90	4527.31	583.22 S	109.46 W	593.37	15.46
4891.29	95.80	191.70	4524.84	614.22 S	116.22 W	625.07	9.28
4923.11	95.40	191.60	4521.74	645.24 S	122.61 W	656.73	1.30
4954.86	94.90	190.10	4518.89	676.29 S	128.56 W	688.35	4.96
4986.61	93.20	190.30	4516.64	707.46 S	134.17 W	720.02	5.39
5018.27	91.40	189.20	4515.37	738.64 S	139.53 W	751.65	6.66
5049.98	91.80	188.90	4514.49	769.94 S	144.51 W	783.34	1.58
5081.54	90.10	189.20	4513.96	801.10 S	149.48 W	814.89	5.47
5113.27	87.30	189.40	4514.68	832.40 S	154.60 W	846.61	8.85
5145.00	85.50	191.20	4516.68	863.56 S	160.27 W	878.27	8.01
5176.66	86.40	188.40	4518.91	894.67 S	165.64 W	909.85	9.27
5208.42	88.00	187.70	4520.46	926.08 S	170.08 W	941.55	5.50
5240.20	90.70	187.90	4520.83	957.56 S	174.39 W	973.30	8.52
5271.93	90.90	187.60	4520.38	989.00 S	178.67 W	1005.00	1.14
5303.67	89.90	187.50	4520.16	1020.46 S	182.84 W	1036.71	3.17
5335.41	90.50	187.70	4520.05	1051.93 S	187.04 W	1068.42	1.99
5367.21	88.70	186.80	4520.27	1083.47 S	191.05 W	1100.18	6.33
5398.98	85.90	189.00	4521.77	1114.90 S	195.41 W	1131.89	11.20
5430.73	86.30	188.90	4523.93	1146.19 S	200.34 W	1163.56	1.30
5462.44	87.40	189.00	4525.67	1177.46 S	205.27 W	1195.22	3.48
5494.14	87.50	188.00	4527.08	1208.78 S	209.95 W	1226.88	3.17
5525.84	88.90	188.00	4528.08	1240.16 S	214.36 W	1258.54	4.42
5557.57	89.50	188.80	4528.52	1271.55 S	218.99 W	1290.25	3.15
5589.21	90.80	189.90	4528.44	1302.76 S	224.13 W	1321.89	5.38
5620.80	91.50	188.70	4527.80	1333.93 S	229.24 W	1353.47	4.40
5652.56	92.00	188.80	4526.83	1365.31 S	234.07 W	1385.21	1.61
5684.21	90.30	189.20	4526.20	1396.56 S	239.02 W	1416.85	5.52
5715.88	87.90	190.20	4526.69	1427.77 S	244.35 W	1448.51	8.21
5747.66	87.70	189.50	4527.91	1459.06 S	249.78 W	1480.27	2.29
5779.39	88.00	188.80	4529.10	1490.36 S	254.83 W	1511.97	2.40
5811.11	87.30	190.00	4530.41	1521.63 S	260.00 W	1543.66	4.38
5842.82	88.70	189.50	4531.51	1552.86 S	265.37 W	1575.35	4.69
5874.68	89.40	190.10	4532.04	1584.25 S	270.79 W	1607.20	2.89
5906.40	90.40	189.90	4532.10	1615.49 S	276.30 W	1638.92	3.22
5938.18	91.80	189.70	4531.49	1646.80 S	281.71 W	1670.70	4.45
5969.98	91.10	189.80	4530.68	1678.13 S	287.09 W	1702.49	2.22

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CONSERVATION DIVISION
WICHITA, KS

APR 26 2000

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

FROM CONFIDENTIAL

CONFIDENTIAL

ORIGINAL

Customer ... : BURIED HILLS PROD CO
Platform ... : A
Slot/Well .. : 1 /BILLINGS 1ST

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6001.63	90.80	189.20	4530.16	1709.34 S	292.31 W	1734.13	2.12
6033.33	90.80	190.10	4529.71	1740.59 S	297.63 W	1765.83	2.84
6064.95	89.60	190.30	4529.60	1771.71 S	303.23 W	1797.45	3.85
6096.53	89.10	190.30	4529.96	1802.78 S	308.87 W	1829.02	1.58
6128.32	88.60	190.90	4530.60	1834.02 S	314.72 W	1860.80	2.46
6160.03	87.30	192.40	4531.73	1865.05 S	321.12 W	1892.48	6.26
6191.81	90.10	191.90	4532.46	1896.11 S	327.80 W	1924.23	8.95
6223.53	91.80	192.30	4531.93	1927.12 S	334.45 W	1955.92	5.51
6255.28	90.70	192.40	4531.24	1958.13 S	341.24 W	1987.63	3.48
6286.95	86.90	190.90	4531.90	1989.13 S	347.63 W	2019.28	12.90
6318.89	86.80	191.70	4533.65	2020.41 S	353.88 W	2051.16	2.52
6350.57	88.50	188.70	4534.95	2051.55 S	359.49 W	2082.81	10.88
6382.32	90.30	189.20	4535.29	2082.92 S	364.42 W	2114.55	5.88
6414.69	91.70	187.50	4534.72	2114.94 S	369.12 W	2146.90	6.80
6445.69	91.60	187.90	4533.83	2145.64 S	373.28 W	2177.86	1.33
6477.41	90.20	188.30	4533.33	2177.04 S	377.75 W	2209.56	4.59
6509.16	90.30	187.40	4533.19	2208.49 S	382.08 W	2241.29	2.85
6540.90	91.20	186.60	4532.78	2239.99 S	385.95 W	2272.98	3.79
6572.60	92.00	186.70	4531.89	2271.47 S	389.62 W	2304.61	2.54
6604.33	92.50	188.30	4530.65	2302.90 S	393.76 W	2336.29	5.28
6636.04	92.30	187.20	4529.32	2334.29 S	398.03 W	2367.94	3.52
6667.88	92.50	188.00	4528.26	2365.64 S	402.24 W	2399.74	3.55
6699.66	89.90	188.20	4527.87	2397.30 S	406.72 W	2431.50	5.07
6731.46	90.00	188.40	4527.90	2428.76 S	411.31 W	2463.28	0.70
6763.21	92.30	187.40	4527.26	2460.20 S	415.67 W	2495.00	7.90
6794.97	94.90	187.70	4525.27	2491.62 S	419.83 W	2526.67	8.24
6856.00	95.00	187.70	4520.00	2551.88 S	427.98 W	2587.42	0.16

NOV 20
CONFIDENTIAL

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET.
N/E COORDINATE VALUES GIVEN RELATIVE TO WELL SYSTEM REFERENCE POINT.
TVD COORDINATE VALUES GIVEN RELATIVE TO WELL SYSTEM REFERENCE POINT.
THE VERTICAL SECTION ORIGIN IS WELL HEAD.
THE VERTICAL SECTION WAS COMPUTED ALONG 190.02 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

SURVEY 6856.00 IS A PROJECTION TO THE BIT

RECEIVED
KANSAS CORPORATION COMMISSION

NOV 20 1997

CONSERVATION DIVISION
WICHITA, KS