

30-025-40220

Yates Petroleum

Lea County, NM (NAD-83)
Warrior "BRW" State Com
#1H

OH

Design: OH

Survey Report - Geographic

24 October, 2014

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Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Site:	Warrior "BRW" State Com	MD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Project	Lea County, NM (NAD-83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Warrior "BRW" State Com		
Site Position:		Northing:	467,618.43 usft
From:	Map	Easting:	836,282.74 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 16' 55.022 N
		Longitude:	103° 22' 44.211 W
		Grid Convergence:	0.51 °

Well	#1H		
Well Position	+N-S	0.0 usft	Northing: 467,618.43 usft
	+E-W	0.0 usft	Easting: 836,282.74 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Ground Level:	3,364.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	9/12/2014	7.10
			Dip Angle (°)
			60.19
			Field Strength (nT)
			48,347

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction (°)
			179.44

Survey Program	Date 10/24/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	1,600.0	Survey #1 - Gyro (OH)	CB-GYRO-MS
1,614.0	15,990.0	Survey #2 - Crescent MWD Surveys (OH)	MWD
			Description
			Camera based gyro multishot
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Map	Map			
Depth	(°)	(°)	Depth	(usft)	(usft)	Northing	Easting	Latitude	Longitude	
(usft)			(usft)			(usft)	(usft)			
0.0	0.00	0.00	0.0	0.0	0.0	467,618.43	836,282.74	32° 16' 55.022 N	103° 22' 44.211 W	
100.0	0.48	36.72	100.0	0.3	0.3	467,618.77	836,282.99	32° 16' 55.025 N	103° 22' 44.208 W	
200.0	0.66	78.13	200.0	0.8	1.1	467,619.22	836,283.81	32° 16' 55.029 N	103° 22' 44.198 W	
300.0	0.68	77.96	300.0	1.0	2.2	467,619.46	836,284.95	32° 16' 55.032 N	103° 22' 44.185 W	
400.0	0.52	81.90	400.0	1.2	3.2	467,619.65	836,285.98	32° 16' 55.033 N	103° 22' 44.173 W	
500.0	0.42	131.20	500.0	1.0	4.0	467,619.47	836,286.70	32° 16' 55.032 N	103° 22' 44.164 W	
600.0	0.32	173.82	600.0	0.5	4.3	467,618.95	836,287.01	32° 16' 55.026 N	103° 22' 44.161 W	
700.0	0.38	197.11	700.0	-0.1	4.2	467,618.36	836,286.94	32° 16' 55.021 N	103° 22' 44.162 W	
800.0	0.29	181.98	800.0	-0.6	4.1	467,617.79	836,286.84	32° 16' 55.015 N	103° 22' 44.163 W	
900.0	0.33	171.85	900.0	-1.2	4.1	467,617.25	836,286.87	32° 16' 55.010 N	103° 22' 44.163 W	
1,000.0	0.34	212.55	1,000.0	-1.7	4.0	467,616.72	836,286.75	32° 16' 55.004 N	103° 22' 44.164 W	

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Site:	Warrior "BRW" State Com	MD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,100.0	0.42	196.90	1,100.0	-2.3	3.7	467,616.12	836,286.48	32° 16' 54.998 N	103° 22' 44.167 W
1,200.0	0.26	213.87	1,200.0	-2.9	3.5	467,615.58	836,286.25	32° 16' 54.993 N	103° 22' 44.170 W
1,300.0	0.53	213.14	1,300.0	-3.4	3.1	467,615.00	836,285.87	32° 16' 54.987 N	103° 22' 44.175 W
1,400.0	0.49	215.86	1,400.0	-4.2	2.6	467,614.27	836,285.37	32° 16' 54.980 N	103° 22' 44.180 W
1,500.0	0.36	261.82	1,500.0	-4.6	2.1	467,613.88	836,284.81	32° 16' 54.976 N	103° 22' 44.187 W
1,600.0	0.34	237.30	1,600.0	-4.8	1.5	467,613.67	836,284.25	32° 16' 54.974 N	103° 22' 44.194 W
1,614.0	0.40	245.10	1,614.0	-4.8	1.4	467,613.63	836,284.17	32° 16' 54.974 N	103° 22' 44.194 W
1,804.0	0.60	268.90	1,803.9	-5.1	-0.2	467,613.33	836,282.57	32° 16' 54.971 N	103° 22' 44.213 W
1,993.0	0.40	267.10	1,992.9	-5.2	-1.8	467,613.28	836,280.92	32° 16' 54.971 N	103° 22' 44.232 W
2,183.0	0.40	267.30	2,182.9	-5.2	-3.1	467,613.21	836,279.60	32° 16' 54.970 N	103° 22' 44.248 W
2,373.0	0.20	296.30	2,372.9	-5.1	-4.1	467,613.33	836,278.64	32° 16' 54.971 N	103° 22' 44.259 W
2,562.0	0.10	278.30	2,561.9	-4.9	-4.6	467,613.50	836,278.18	32° 16' 54.973 N	103° 22' 44.264 W
2,752.0	0.10	309.50	2,751.9	-4.8	-4.9	467,613.63	836,277.89	32° 16' 54.975 N	103° 22' 44.268 W
2,941.0	0.20	12.80	2,940.9	-4.4	-4.9	467,614.05	836,277.83	32° 16' 54.979 N	103° 22' 44.268 W
3,131.0	0.40	45.20	3,130.9	-3.6	-4.4	467,614.85	836,278.38	32° 16' 54.987 N	103° 22' 44.262 W
3,321.0	0.70	46.50	3,320.9	-2.3	-3.1	467,616.11	836,279.69	32° 16' 54.999 N	103° 22' 44.246 W
3,510.0	0.90	52.70	3,509.9	-0.6	-1.0	467,617.81	836,281.71	32° 16' 55.016 N	103° 22' 44.223 W
3,700.0	0.40	242.10	3,699.9	0.0	-0.4	467,618.40	836,282.31	32° 16' 55.021 N	103° 22' 44.216 W
3,889.0	0.40	265.70	3,888.9	-0.4	-1.7	467,618.04	836,281.07	32° 16' 55.018 N	103° 22' 44.230 W
3,984.0	0.40	253.10	3,983.9	-0.5	-2.3	467,617.92	836,280.42	32° 16' 55.017 N	103° 22' 44.238 W
4,079.0	0.40	269.00	4,078.9	-0.6	-3.0	467,617.82	836,279.77	32° 16' 55.016 N	103° 22' 44.245 W
4,174.0	0.40	249.30	4,173.9	-0.7	-3.6	467,617.70	836,279.13	32° 16' 55.015 N	103° 22' 44.253 W
4,268.0	0.40	232.00	4,267.9	-1.1	-4.2	467,617.38	836,278.56	32° 16' 55.012 N	103° 22' 44.259 W
4,363.0	0.20	222.00	4,362.9	-1.4	-4.6	467,617.05	836,278.19	32° 16' 55.008 N	103° 22' 44.264 W
4,457.0	0.30	184.70	4,456.9	-1.7	-4.7	467,616.68	836,278.06	32° 16' 55.005 N	103° 22' 44.265 W
4,552.0	0.40	192.30	4,551.9	-2.3	-4.8	467,616.11	836,277.97	32° 16' 54.999 N	103° 22' 44.266 W
4,647.0	0.30	240.60	4,646.9	-2.8	-5.1	467,615.66	836,277.68	32° 16' 54.995 N	103° 22' 44.270 W
4,742.0	0.50	248.10	4,741.9	-3.0	-5.7	467,615.39	836,277.08	32° 16' 54.992 N	103° 22' 44.277 W
4,837.0	0.50	258.00	4,836.9	-3.3	-6.5	467,615.15	836,276.29	32° 16' 54.990 N	103° 22' 44.286 W
4,932.0	0.60	291.00	4,931.9	-3.2	-7.3	467,615.24	836,275.42	32° 16' 54.991 N	103° 22' 44.296 W
5,027.0	0.50	283.00	5,026.9	-2.9	-8.2	467,615.51	836,274.55	32° 16' 54.993 N	103° 22' 44.306 W
5,121.0	0.60	283.10	5,120.9	-2.7	-9.1	467,615.71	836,273.67	32° 16' 54.996 N	103° 22' 44.316 W
5,216.0	0.70	287.00	5,215.9	-2.4	-10.1	467,616.00	836,272.63	32° 16' 54.998 N	103° 22' 44.329 W
5,311.0	0.80	293.00	5,310.8	-2.0	-11.3	467,616.43	836,271.47	32° 16' 55.003 N	103° 22' 44.342 W
5,406.0	0.90	294.80	5,405.8	-1.4	-12.6	467,617.00	836,270.18	32° 16' 55.009 N	103° 22' 44.357 W
5,501.0	0.90	290.00	5,500.8	-0.9	-13.9	467,617.57	836,268.80	32° 16' 55.014 N	103° 22' 44.373 W
5,595.0	0.90	281.40	5,594.8	-0.5	-15.4	467,617.96	836,267.39	32° 16' 55.018 N	103° 22' 44.390 W
5,777.0	0.90	230.10	5,776.8	-1.1	-17.9	467,617.33	836,264.89	32° 16' 55.012 N	103° 22' 44.419 W
5,966.0	0.30	165.30	5,965.8	-2.5	-18.9	467,615.90	836,263.88	32° 16' 54.998 N	103° 22' 44.431 W
6,155.0	0.30	209.80	6,154.8	-3.4	-19.0	467,614.99	836,263.75	32° 16' 54.989 N	103° 22' 44.432 W
6,344.0	0.40	268.20	6,343.8	-3.9	-19.9	467,614.54	836,262.85	32° 16' 54.985 N	103° 22' 44.443 W
6,534.0	0.40	282.70	6,533.8	-3.8	-21.2	467,614.67	836,261.54	32° 16' 54.986 N	103° 22' 44.458 W
6,724.0	0.40	281.60	6,723.8	-3.5	-22.5	467,614.95	836,260.24	32° 16' 54.989 N	103° 22' 44.473 W
6,913.0	1.30	45.90	6,912.8	-1.9	-21.6	467,616.57	836,261.14	32° 16' 55.005 N	103° 22' 44.462 W
7,008.0	1.40	46.10	7,007.7	-0.3	-20.0	467,618.12	836,262.75	32° 16' 55.020 N	103° 22' 44.444 W
7,198.0	1.10	48.70	7,197.7	2.5	-17.0	467,620.94	836,265.79	32° 16' 55.048 N	103° 22' 44.408 W
7,388.0	1.10	45.20	7,387.6	5.0	-14.3	467,623.43	836,268.45	32° 16' 55.072 N	103° 22' 44.377 W
7,577.0	0.90	30.60	7,576.6	7.6	-12.2	467,625.98	836,270.50	32° 16' 55.097 N	103° 22' 44.352 W
7,766.0	0.70	11.40	7,765.6	10.0	-11.3	467,628.39	836,271.48	32° 16' 55.121 N	103° 22' 44.341 W
7,955.0	0.60	18.90	7,954.6	12.0	-10.7	467,630.46	836,272.03	32° 16' 55.142 N	103° 22' 44.334 W
8,144.0	0.20	45.10	8,143.6	13.2	-10.2	467,631.63	836,272.58	32° 16' 55.153 N	103° 22' 44.328 W
8,333.0	0.40	49.70	8,332.6	13.9	-9.4	467,632.29	836,273.32	32° 16' 55.160 N	103° 22' 44.319 W
8,522.0	0.50	47.00	8,521.6	14.8	-8.3	467,633.28	836,274.43	32° 16' 55.169 N	103° 22' 44.306 W
8,712.0	0.40	38.30	8,711.6	15.9	-7.3	467,634.36	836,275.44	32° 16' 55.180 N	103° 22' 44.294 W
8,901.0	0.40	9.60	8,900.6	17.1	-6.8	467,635.53	836,275.96	32° 16' 55.191 N	103° 22' 44.288 W

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Site:	Warrior "BRW" State Com	MD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,092.0	0.30	272.50	9,091.6	17.8	-7.2	467,636.21	836,275.57	32° 16' 55.198 N	103° 22' 44.292 W
9,281.0	0.40	26.80	9,280.6	18.4	-7.4	467,636.82	836,275.38	32° 16' 55.204 N	103° 22' 44.294 W
9,444.0	0.70	240.60	9,443.6	18.4	-8.0	467,636.84	836,274.77	32° 16' 55.204 N	103° 22' 44.302 W
9,560.0	0.40	73.70	9,559.6	18.2	-8.2	467,636.61	836,274.54	32° 16' 55.202 N	103° 22' 44.304 W
9,750.0	1.00	98.00	9,749.5	18.1	-5.9	467,636.56	836,276.82	32° 16' 55.202 N	103° 22' 44.278 W
9,844.0	1.10	114.60	9,843.5	17.6	-4.3	467,636.07	836,278.45	32° 16' 55.197 N	103° 22' 44.259 W
9,939.0	0.50	42.70	9,938.5	17.6	-3.2	467,636.00	836,279.56	32° 16' 55.196 N	103° 22' 44.246 W
10,128.0	1.40	72.90	10,127.5	18.9	-0.4	467,637.28	836,282.32	32° 16' 55.208 N	103° 22' 44.214 W
10,316.0	1.10	103.20	10,315.4	19.1	3.5	467,637.55	836,286.28	32° 16' 55.210 N	103° 22' 44.167 W
10,503.0	0.40	309.30	10,502.4	19.1	4.8	467,637.55	836,287.52	32° 16' 55.210 N	103° 22' 44.153 W
10,692.0	0.70	324.50	10,691.4	20.5	3.6	467,638.91	836,286.34	32° 16' 55.224 N	103° 22' 44.167 W
10,786.0	1.50	344.00	10,785.4	22.1	2.9	467,640.56	836,285.67	32° 16' 55.240 N	103° 22' 44.174 W
10,880.0	0.40	89.30	10,879.4	23.3	2.9	467,641.74	836,285.65	32° 16' 55.252 N	103° 22' 44.174 W
10,976.0	0.90	89.70	10,975.4	23.3	4.0	467,641.75	836,286.74	32° 16' 55.252 N	103° 22' 44.162 W
11,024.0	1.00	92.00	11,023.4	23.3	4.8	467,641.74	836,287.54	32° 16' 55.252 N	103° 22' 44.152 W
11,082.0	2.20	140.50	11,081.4	22.4	6.0	467,640.86	836,288.75	32° 16' 55.243 N	103° 22' 44.138 W
11,101.0	3.80	157.10	11,100.3	21.6	6.5	467,640.00	836,289.23	32° 16' 55.234 N	103° 22' 44.133 W
KOP: 11101.00' MD, 11100.34' TVD									
11,148.0	10.60	166.60	11,146.9	15.9	8.1	467,634.35	836,290.84	32° 16' 55.178 N	103° 22' 44.115 W
11,196.0	16.40	169.40	11,193.6	5.0	10.4	467,623.39	836,293.11	32° 16' 55.070 N	103° 22' 44.089 W
11,213.3	17.98	169.86	11,210.1	-0.1	11.3	467,618.36	836,294.03	32° 16' 55.020 N	103° 22' 44.079 W
Cross 330' Hardline: 11213.30' MD, 11210.12' TVD, 17.98° INC									
11,243.0	20.70	170.50	11,238.1	-9.8	13.0	467,608.67	836,295.70	32° 16' 54.924 N	103° 22' 44.061 W
11,292.0	26.30	175.90	11,283.1	-29.2	15.2	467,589.28	836,297.91	32° 16' 54.732 N	103° 22' 44.037 W
11,340.0	32.40	178.90	11,324.9	-52.6	16.2	467,565.79	836,298.92	32° 16' 54.499 N	103° 22' 44.028 W
11,387.0	37.80	179.20	11,363.3	-79.6	16.6	467,538.78	836,299.36	32° 16' 54.232 N	103° 22' 44.025 W
11,434.0	42.80	179.90	11,399.2	-110.0	16.9	467,508.39	836,299.59	32° 16' 53.931 N	103° 22' 44.026 W
11,482.0	48.00	181.80	11,432.9	-144.2	16.3	467,474.24	836,299.06	32° 16' 53.593 N	103° 22' 44.035 W
11,529.0	53.50	182.10	11,462.6	-180.6	15.1	467,437.87	836,297.82	32° 16' 53.234 N	103° 22' 44.054 W
11,577.0	59.10	182.20	11,489.2	-220.4	13.6	467,397.98	836,296.32	32° 16' 52.839 N	103° 22' 44.075 W
11,625.0	63.90	182.80	11,512.1	-262.6	11.7	467,355.85	836,294.48	32° 16' 52.422 N	103° 22' 44.101 W
11,671.0	70.20	182.40	11,530.0	-304.9	9.8	467,313.56	836,292.56	32° 16' 52.004 N	103° 22' 44.128 W
11,728.0	76.50	181.50	11,546.3	-359.4	8.0	467,259.01	836,290.71	32° 16' 51.465 N	103° 22' 44.155 W
11,766.0	81.20	180.90	11,553.7	-396.7	7.2	467,221.75	836,289.93	32° 16' 51.096 N	103° 22' 44.168 W
11,797.0	85.30	180.40	11,557.3	-427.5	6.8	467,190.97	836,289.58	32° 16' 50.791 N	103° 22' 44.175 W
11,828.0	87.30	180.30	11,559.3	-458.4	6.6	467,160.04	836,289.39	32° 16' 50.485 N	103° 22' 44.181 W
11,860.0	87.50	180.40	11,560.8	-490.4	6.5	467,128.07	836,289.20	32° 16' 50.169 N	103° 22' 44.186 W
EOC: 11860.00' MD, 11560.79' TVD, 87.50° INC, 180.40° AZ, 490.40' VS									
11,891.0	87.40	180.40	11,562.2	-521.3	6.2	467,097.10	836,288.98	32° 16' 49.863 N	103° 22' 44.192 W
11,986.0	89.80	180.70	11,564.5	-616.3	5.3	467,002.14	836,288.07	32° 16' 48.923 N	103° 22' 44.212 W
12,080.0	89.90	180.40	11,564.7	-710.3	4.4	466,908.15	836,287.17	32° 16' 47.993 N	103° 22' 44.233 W
12,175.0	89.70	180.40	11,565.1	-805.3	3.8	466,813.15	836,286.50	32° 16' 47.053 N	103° 22' 44.250 W
12,270.0	89.20	180.30	11,566.0	-900.3	3.2	466,718.16	836,285.92	32° 16' 46.113 N	103° 22' 44.267 W
12,364.0	90.00	180.50	11,566.6	-994.3	2.5	466,624.16	836,285.27	32° 16' 45.183 N	103° 22' 44.284 W
12,459.0	90.10	179.50	11,566.6	-1,089.3	2.5	466,529.16	836,285.27	32° 16' 44.243 N	103° 22' 44.294 W
12,554.0	90.00	179.20	11,566.5	-1,184.3	3.6	466,434.17	836,286.34	32° 16' 43.303 N	103° 22' 44.291 W
12,649.0	89.60	178.90	11,566.8	-1,279.2	5.2	466,339.18	836,287.92	32° 16' 42.363 N	103° 22' 44.283 W
12,743.0	89.20	179.10	11,567.8	-1,373.2	6.8	466,245.20	836,289.56	32° 16' 41.433 N	103° 22' 44.273 W
12,838.0	90.40	178.60	11,568.1	-1,468.2	8.7	466,150.22	836,291.47	32° 16' 40.494 N	103° 22' 44.261 W
12,933.0	89.70	177.90	11,568.0	-1,563.2	11.6	466,055.27	836,294.37	32° 16' 39.554 N	103° 22' 44.237 W
13,027.0	90.50	178.20	11,567.9	-1,657.1	14.8	465,961.32	836,297.57	32° 16' 38.624 N	103° 22' 44.210 W
13,122.0	90.10	177.90	11,567.4	-1,752.1	18.1	465,866.38	836,300.80	32° 16' 37.684 N	103° 22' 44.182 W
13,217.0	91.20	178.20	11,566.3	-1,847.0	21.3	465,771.44	836,304.03	32° 16' 36.745 N	103° 22' 44.154 W
13,312.0	91.00	178.20	11,564.5	-1,941.9	24.3	465,676.51	836,307.01	32° 16' 35.805 N	103° 22' 44.129 W
13,406.0	90.60	177.90	11,563.2	-2,035.9	27.5	465,582.57	836,310.21	32° 16' 34.875 N	103° 22' 44.102 W

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Site:	Warrior "BRW" State Com	MD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
13,501.0	90.70	179.90	11,562.1	-2,130.8	29.3	465,487.60	836,312.04	32° 16' 33.935 N	103° 22' 44.090 W	
13,596.0	90.30	180.30	11,561.3	-2,225.8	29.1	465,392.60	836,311.87	32° 16' 32.995 N	103° 22' 44.102 W	
13,690.0	89.80	180.40	11,561.2	-2,319.8	28.6	465,298.61	836,311.30	32° 16' 32.065 N	103° 22' 44.118 W	
13,784.0	90.70	180.30	11,560.8	-2,413.8	28.0	465,204.61	836,310.72	32° 16' 31.135 N	103° 22' 44.135 W	
13,879.0	90.50	181.00	11,559.8	-2,508.8	26.9	465,109.62	836,309.64	32° 16' 30.196 N	103° 22' 44.157 W	
13,973.0	90.90	180.30	11,558.6	-2,602.8	25.8	465,015.64	836,308.58	32° 16' 29.266 N	103° 22' 44.179 W	
14,068.0	91.10	181.20	11,557.0	-2,697.8	24.6	464,920.66	836,307.33	32° 16' 28.326 N	103° 22' 44.204 W	
14,163.0	90.70	180.20	11,555.5	-2,792.8	23.4	464,825.68	836,306.17	32° 16' 27.386 N	103° 22' 44.227 W	
14,257.0	90.00	179.70	11,554.9	-2,886.7	23.5	464,731.68	836,306.26	32° 16' 26.456 N	103° 22' 44.236 W	
14,352.0	89.70	180.40	11,555.1	-2,981.7	23.4	464,636.68	836,306.17	32° 16' 25.516 N	103° 22' 44.247 W	
14,447.0	89.80	180.30	11,555.6	-3,076.7	22.9	464,541.69	836,305.59	32° 16' 24.576 N	103° 22' 44.263 W	
14,542.0	90.20	178.90	11,555.6	-3,171.7	23.5	464,446.69	836,306.26	32° 16' 23.636 N	103° 22' 44.265 W	
14,637.0	89.90	179.60	11,555.5	-3,266.7	24.8	464,351.70	836,307.50	32° 16' 22.696 N	103° 22' 44.261 W	
14,732.0	90.00	178.40	11,555.6	-3,361.7	26.4	464,256.72	836,309.16	32° 16' 21.756 N	103° 22' 44.251 W	
14,827.0	90.10	178.20	11,555.5	-3,456.7	29.2	464,161.76	836,311.98	32° 16' 20.817 N	103° 22' 44.228 W	
14,921.0	90.00	179.10	11,555.4	-3,550.6	31.4	464,067.79	836,314.19	32° 16' 19.887 N	103° 22' 44.212 W	
15,017.0	90.70	177.90	11,554.8	-3,646.6	34.0	463,971.82	836,316.70	32° 16' 18.937 N	103° 22' 44.193 W	
15,112.0	90.20	177.80	11,554.1	-3,741.5	37.5	463,876.89	836,320.27	32° 16' 17.997 N	103° 22' 44.161 W	
15,207.0	89.10	178.10	11,554.6	-3,836.5	40.9	463,781.96	836,323.67	32° 16' 17.058 N	103° 22' 44.131 W	
15,301.0	90.20	179.20	11,555.2	-3,930.4	43.1	463,687.99	836,325.88	32° 16' 16.128 N	103° 22' 44.115 W	
15,391.0	91.00	179.40	11,554.3	-4,020.4	44.2	463,598.00	836,326.98	32° 16' 15.237 N	103° 22' 44.112 W	
15,486.0	90.90	179.30	11,552.7	-4,115.4	45.3	463,503.02	836,328.06	32° 16' 14.297 N	103° 22' 44.109 W	
15,580.0	90.50	179.30	11,551.5	-4,209.4	46.5	463,409.03	836,329.21	32° 16' 13.367 N	103° 22' 44.106 W	
15,675.0	90.50	179.20	11,550.7	-4,304.4	47.7	463,314.05	836,330.45	32° 16' 12.427 N	103° 22' 44.101 W	
15,770.0	90.50	179.10	11,549.9	-4,399.4	49.1	463,219.06	836,331.86	32° 16' 11.487 N	103° 22' 44.094 W	
15,865.0	90.20	178.90	11,549.3	-4,494.4	50.8	463,124.08	836,333.52	32° 16' 10.547 N	103° 22' 44.085 W	
15,932.0	89.80	178.90	11,549.3	-4,561.3	52.1	463,057.09	836,334.80	32° 16' 9.884 N	103° 22' 44.077 W	
Final MWD Survey: 15932.00' MD, 11549.31' TVD, -4561.34' +N-S, 52.06' +E-W										
15,990.0	89.80	178.90	11,549.5	-4,619.3	53.2	462,999.10	836,335.92	32° 16' 9.310 N	103° 22' 44.070 W	
BHL: 15990.00' MD, 11549.51' TVD, 89.80° INC, 178.90° AZ, -4619.33' +N-S, 53.17' +E-W, 4619.63' VS - TD: 15990.00' MD, 11549.51' TVD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N-S (usft)	+E-W (usft)	Comment	
11,101.0	11,100.3	21.6	6.5	KOP: 11101.00' MD, 11100.34' TVD	
11,213.3	11,210.1	-0.1	11.3	Cross 330' Hardline: 11213.30' MD, 11210.12' TVD, 17.98° INC	
11,860.0	11,560.8	-490.4	6.5	EOC: 11860.00' MD, 11560.79' TVD, 87.50° INC, 180.40° AZ, 490.40' VS	
15,932.0	11,549.3	-4,561.3	52.1	Final MWD Survey: 15932.00' MD, 11549.31' TVD, -4561.34' +N-S, 52.06' +E-W	
15,990.0	11,549.5	-4,619.3	53.2	BHL: 15990.00' MD, 11549.51' TVD, 89.80° INC, 178.90° AZ, -4619.33' +N-S, 53.17' +E-W, 4619.63' VS	
15,990.0	11,549.5	-4,619.3	53.2	TD: 15990.00' MD, 11549.51' TVD	

Checked By: _____	Approved By: _____	Date: _____
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Yates Petroleum

Lea County, NM (NAD-83)
Warrior "BRW" State Com
#1H

OH

Design: OH

Standard Survey Report

24 October, 2014

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APR 22 2015
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Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Site:	Warrior "BRW" State Com	MD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Project	Lea County, NM (NAD-83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Warrior "BRW" State Com		
Site Position:		Northing:	467,618.43 usft
From:	Map	Easting:	836,282.74 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 16' 55.022 N
		Longitude:	103° 22' 44.211 W
		Grid Convergence:	0.51 °

Well	#1H		
Well Position	+N/-S	0.0 usft	Northing: 467,618.43 usft
	+E/-W	0.0 usft	Easting: 836,282.74 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 16' 55.022 N
		Longitude:	103° 22' 44.211 W
		Ground Level:	3,364.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	9/12/2014	7.10
			Dip Angle
			(°)
			60.19
			Field Strength
			(nT)
			48,347

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			179.44

Survey Program	Date: 10/24/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	1,600.0	Survey #1 - Gyro (OH)	CB-GYRO-MS
1,614.0	15,990.0	Survey #2 - Crescent MWD Surveys (OH)	MWD
			Description
			Camera based gyro multishot
			MWD - Standard

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.48	36.72	100.0	0.3	0.3	-0.3	0.48	0.48	0.00
200.0	0.66	78.13	200.0	0.8	1.1	-0.8	0.44	0.18	41.41
300.0	0.68	77.96	300.0	1.0	2.2	-1.0	0.02	0.02	-0.17
400.0	0.52	81.90	400.0	1.2	3.2	-1.2	0.17	-0.16	3.94
500.0	0.42	131.20	500.0	1.0	4.0	-1.0	0.40	-0.10	49.30
600.0	0.32	173.82	600.0	0.5	4.3	-0.5	0.28	-0.10	42.62
700.0	0.38	197.11	700.0	-0.1	4.2	0.1	0.15	0.06	23.29
800.0	0.29	181.98	800.0	-0.6	4.1	0.7	0.13	-0.09	-15.13
900.0	0.33	171.85	900.0	-1.2	4.1	1.2	0.07	0.04	-10.13

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Site:	Warrior "BRW" State Com	MD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	0.34	212.55	1,000.0	-1.7	4.0	1.8	0.23	0.01	40.70
1,100.0	0.42	196.90	1,100.0	-2.3	3.7	2.4	0.13	0.08	-15.65
1,200.0	0.26	213.87	1,200.0	-2.9	3.5	2.9	0.19	-0.16	16.97
1,300.0	0.53	213.14	1,300.0	-3.4	3.1	3.5	0.27	0.27	-0.73
1,400.0	0.49	215.86	1,400.0	-4.2	2.6	4.2	0.05	-0.04	2.72
1,500.0	0.36	261.82	1,500.0	-4.6	2.1	4.6	0.35	-0.13	45.96
1,600.0	0.34	237.30	1,600.0	-4.8	1.5	4.8	0.15	-0.02	-24.52
1,614.0	0.40	245.10	1,614.0	-4.8	1.4	4.8	0.56	0.43	55.71
1,804.0	0.60	268.90	1,803.9	-5.1	-0.2	5.1	0.15	0.11	12.53
1,993.0	0.40	267.10	1,992.9	-5.2	-1.8	5.1	0.11	-0.11	-0.95
2,183.0	0.40	267.30	2,182.9	-5.2	-3.1	5.2	0.00	0.00	0.11
2,373.0	0.20	296.30	2,372.9	-5.1	-4.1	5.1	0.13	-0.11	15.26
2,562.0	0.10	278.30	2,561.9	-4.9	-4.6	4.9	0.06	-0.05	-9.52
2,752.0	0.10	309.50	2,751.9	-4.8	-4.9	4.8	0.03	0.00	16.42
2,941.0	0.20	12.80	2,940.9	-4.4	-4.9	4.3	0.09	0.05	33.49
3,131.0	0.40	45.20	3,130.9	-3.6	-4.4	3.5	0.13	0.11	17.05
3,321.0	0.70	46.50	3,320.9	-2.3	-3.1	2.3	0.16	0.16	0.68
3,510.0	0.90	52.70	3,509.9	-0.6	-1.0	0.6	0.12	0.11	3.28
3,700.0	0.40	242.10	3,699.9	0.0	-0.4	0.0	0.68	-0.26	-89.79
3,889.0	0.40	265.70	3,888.9	-0.4	-1.7	0.4	0.09	0.00	12.49
3,984.0	0.40	253.10	3,983.9	-0.5	-2.3	0.5	0.09	0.00	-13.26
4,079.0	0.40	269.00	4,078.9	-0.6	-3.0	0.6	0.12	0.00	16.74
4,174.0	0.40	249.30	4,173.9	-0.7	-3.6	0.7	0.14	0.00	-20.74
4,268.0	0.40	232.00	4,267.9	-1.1	-4.2	1.0	0.13	0.00	-18.40
4,363.0	0.20	222.00	4,362.9	-1.4	-4.6	1.3	0.22	-0.21	-10.53
4,457.0	0.30	184.70	4,456.9	-1.7	-4.7	1.7	0.20	0.11	-39.68
4,552.0	0.40	192.30	4,551.9	-2.3	-4.8	2.3	0.12	0.11	8.00
4,647.0	0.30	240.60	4,646.9	-2.8	-5.1	2.7	0.32	-0.11	50.84
4,742.0	0.50	248.10	4,741.9	-3.0	-5.7	3.0	0.22	0.21	7.89
4,837.0	0.50	258.00	4,836.9	-3.3	-6.5	3.2	0.09	0.00	10.42
4,932.0	0.60	291.00	4,931.9	-3.2	-7.3	3.1	0.34	0.11	34.74
5,027.0	0.50	283.00	5,026.9	-2.9	-8.2	2.8	0.13	-0.11	-8.42
5,121.0	0.60	283.10	5,120.9	-2.7	-9.1	2.6	0.11	0.11	0.11
5,216.0	0.70	287.00	5,215.9	-2.4	-10.1	2.3	0.12	0.11	4.11
5,311.0	0.80	293.00	5,310.8	-2.0	-11.3	1.9	0.13	0.11	6.32
5,406.0	0.90	294.80	5,405.8	-1.4	-12.6	1.3	0.11	0.11	1.89
5,501.0	0.90	290.00	5,500.8	-0.9	-13.9	0.7	0.08	0.00	-5.05
5,595.0	0.90	281.40	5,594.8	-0.5	-15.4	0.3	0.14	0.00	-9.15
5,777.0	0.90	230.10	5,776.8	-1.1	-17.9	0.9	0.43	0.00	-28.19
5,966.0	0.30	165.30	5,965.8	-2.5	-18.9	2.3	0.43	-0.32	-34.29
6,155.0	0.30	209.80	6,154.8	-3.4	-19.0	3.3	0.12	0.00	23.54
6,344.0	0.40	268.20	6,343.8	-3.9	-19.9	3.7	0.19	0.05	30.90
6,534.0	0.40	282.70	6,533.8	-3.8	-21.2	3.6	0.05	0.00	7.63

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Site:	Warrior "BRW" State Com	MD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,724.0	0.40	281.60	6,723.8	-3.5	-22.5	3.3	0.00	0.00	-0.58	
6,913.0	1.30	45.90	6,912.8	-1.9	-21.6	1.6	0.83	0.48	65.77	
7,008.0	1.40	46.10	7,007.7	-0.3	-20.0	0.1	0.11	0.11	0.21	
7,198.0	1.10	48.70	7,197.7	2.5	-17.0	-2.7	0.16	-0.16	1.37	
7,388.0	1.10	45.20	7,387.6	5.0	-14.3	-5.1	0.04	0.00	-1.84	
7,577.0	0.90	30.60	7,576.6	7.6	-12.2	-7.7	0.17	-0.11	-7.72	
7,766.0	0.70	11.40	7,765.6	10.0	-11.3	-10.1	0.18	-0.11	-10.16	
7,955.0	0.60	18.90	7,954.6	12.0	-10.7	-12.1	0.07	-0.05	3.97	
8,144.0	0.20	45.10	8,143.6	13.2	-10.2	-13.3	0.23	-0.21	13.86	
8,333.0	0.40	49.70	8,332.6	13.9	-9.4	-13.9	0.11	0.11	2.43	
8,522.0	0.50	47.00	8,521.6	14.8	-8.3	-14.9	0.05	0.05	-1.43	
8,712.0	0.40	38.30	8,711.6	15.9	-7.3	-16.0	0.06	-0.05	-4.58	
8,901.0	0.40	9.60	8,900.6	17.1	-6.8	-17.2	0.10	0.00	-15.19	
9,092.0	0.30	272.50	9,091.6	17.8	-7.2	-17.8	0.28	-0.05	-50.84	
9,281.0	0.40	26.80	9,280.6	18.4	-7.4	-18.5	0.31	0.05	60.48	
9,444.0	0.70	240.60	9,443.6	18.4	-8.0	-18.5	0.65	0.18	-89.69	
9,560.0	0.40	73.70	9,559.6	18.2	-8.2	-18.3	0.94	-0.26	-143.88	
9,750.0	1.00	98.00	9,749.5	18.1	-5.9	-18.2	0.35	0.32	12.79	
9,844.0	1.10	114.60	9,843.5	17.6	-4.3	-17.7	0.34	0.11	17.66	
9,939.0	0.50	42.70	9,938.5	17.6	-3.2	-17.6	1.11	-0.63	-75.68	
10,128.0	1.40	72.90	10,127.5	18.9	-0.4	-18.9	0.53	0.48	15.98	
10,316.0	1.10	103.20	10,315.4	19.1	3.5	-19.1	0.38	-0.16	16.12	
10,503.0	0.40	309.30	10,502.4	19.1	4.8	-19.1	0.79	-0.37	-82.30	
10,692.0	0.70	324.50	10,691.4	20.5	3.6	-20.4	0.18	0.16	8.04	
10,786.0	1.50	344.00	10,785.4	22.1	2.9	-22.1	0.93	0.85	20.74	
10,880.0	0.40	89.30	10,879.4	23.3	2.9	-23.3	1.76	-1.17	112.02	
10,976.0	0.90	89.70	10,975.4	23.3	4.0	-23.3	0.52	0.52	0.42	
11,024.0	1.00	92.00	11,023.4	23.3	4.8	-23.3	0.22	0.21	4.79	
11,082.0	2.20	140.50	11,081.4	22.4	6.0	-22.4	2.95	2.07	83.62	
11,101.0	3.80	157.10	11,100.3	21.6	6.5	-21.5	9.50	8.42	87.37	
KOP: 11101.00° MD, 11100.34° TVD										
11,148.0	10.60	166.60	11,146.9	15.9	8.1	-15.8	14.64	14.47	20.21	
11,196.0	16.40	169.40	11,193.6	5.0	10.4	-4.9	12.16	12.08	5.83	
11,213.3	17.98	169.86	11,210.1	-0.1	11.3	0.2	9.18	9.14	2.68	
Cross 330° Hardline: 11213.30° MD, 11210.12° TVD, 17.98° INC										
11,243.0	20.70	170.50	11,238.1	-9.8	13.0	9.9	9.18	9.15	2.14	
11,292.0	26.30	175.90	11,283.1	-29.2	15.2	29.3	12.23	11.43	11.02	
11,340.0	32.40	178.90	11,324.9	-52.6	16.2	52.8	13.07	12.71	6.25	
11,387.0	37.80	179.20	11,363.3	-79.6	16.6	79.8	11.50	11.49	0.64	
11,434.0	42.80	179.90	11,399.2	-110.0	16.9	110.2	10.68	10.64	1.49	
11,482.0	48.00	181.80	11,432.9	-144.2	16.3	144.3	11.19	10.83	3.96	
11,529.0	53.50	182.10	11,462.6	-180.6	15.1	180.7	11.71	11.70	0.64	
11,577.0	59.10	182.20	11,489.2	-220.4	13.6	220.6	11.67	11.67	0.21	
11,625.0	63.90	182.80	11,512.1	-262.6	11.7	262.7	10.06	10.00	1.25	

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Site:	Warrior "BRW" State Com	MD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,671.0	70.20	182.40	11,530.0	-304.9	9.8	305.0	13.72	13.70	-0.87
11,728.0	76.50	181.50	11,546.3	-359.4	8.0	359.5	11.16	11.05	-1.58
11,766.0	81.20	180.90	11,553.7	-396.7	7.2	396.7	12.46	12.37	-1.58
11,797.0	85.30	180.40	11,557.3	-427.5	6.8	427.5	13.32	13.23	-1.61
11,828.0	87.30	180.30	11,559.3	-458.4	6.6	458.4	6.46	6.45	-0.32
11,860.0	87.50	180.40	11,560.8	-490.4	6.5	490.4	0.70	0.63	0.31
EOC: 11860.00' MD, 11560.79' TVD, 87.50° INC, 180.40° AZ, 490.40' VS									
11,891.0	87.40	180.40	11,562.2	-521.3	6.2	521.4	0.32	-0.32	0.00
11,986.0	89.80	180.70	11,564.5	-616.3	5.3	616.3	2.55	2.53	0.32
12,080.0	89.90	180.40	11,564.7	-710.3	4.4	710.3	0.34	0.11	-0.32
12,175.0	89.70	180.40	11,565.1	-805.3	3.8	805.3	0.21	-0.21	0.00
12,270.0	89.20	180.30	11,566.0	-900.3	3.2	900.3	0.54	-0.53	-0.11
12,364.0	90.00	180.50	11,566.6	-994.3	2.5	994.2	0.88	0.85	0.21
12,459.0	90.10	179.50	11,566.6	-1,089.3	2.5	1,089.2	1.06	0.11	-1.05
12,554.0	90.00	179.20	11,566.5	-1,184.3	3.6	1,184.2	0.33	-0.11	-0.32
12,649.0	89.60	178.90	11,566.8	-1,279.2	5.2	1,279.2	0.53	-0.42	-0.32
12,743.0	89.20	179.10	11,567.8	-1,373.2	6.8	1,373.2	0.48	-0.43	0.21
12,838.0	90.40	178.60	11,568.1	-1,468.2	8.7	1,468.2	1.37	1.26	-0.53
12,933.0	89.70	177.90	11,568.0	-1,563.2	11.6	1,563.2	1.04	-0.74	-0.74
13,027.0	90.50	178.20	11,567.9	-1,657.1	14.8	1,657.2	0.91	0.85	0.32
13,122.0	90.10	177.90	11,567.4	-1,752.1	18.1	1,752.1	0.53	-0.42	-0.32
13,217.0	91.20	178.20	11,566.3	-1,847.0	21.3	1,847.1	1.20	1.16	0.32
13,312.0	91.00	178.20	11,564.5	-1,941.9	24.3	1,942.1	0.21	-0.21	0.00
13,406.0	90.60	177.90	11,563.2	-2,035.9	27.5	2,036.0	0.53	-0.43	-0.32
13,501.0	90.70	179.90	11,562.1	-2,130.8	29.3	2,131.0	2.11	0.11	2.11
13,596.0	90.30	180.30	11,561.3	-2,225.8	29.1	2,226.0	0.60	-0.42	0.42
13,690.0	89.80	180.40	11,561.2	-2,319.8	28.6	2,320.0	0.54	-0.53	0.11
13,784.0	90.70	180.30	11,560.8	-2,413.8	28.0	2,414.0	0.96	0.96	-0.11
13,879.0	90.50	181.00	11,559.8	-2,508.8	26.9	2,509.0	0.77	-0.21	0.74
13,973.0	90.90	180.30	11,558.6	-2,602.8	25.8	2,602.9	0.86	0.43	-0.74
14,068.0	91.10	181.20	11,557.0	-2,697.8	24.6	2,697.9	0.97	0.21	0.95
14,163.0	90.70	180.20	11,555.5	-2,792.8	23.4	2,792.8	1.13	-0.42	-1.05
14,257.0	90.00	179.70	11,554.9	-2,886.7	23.5	2,886.8	0.92	-0.74	-0.53
14,352.0	89.70	180.40	11,555.1	-2,981.7	23.4	2,981.8	0.80	-0.32	0.74
14,447.0	89.80	180.30	11,555.6	-3,076.7	22.9	3,076.8	0.15	0.11	-0.11
14,542.0	90.20	178.90	11,555.6	-3,171.7	23.5	3,171.8	1.53	0.42	-1.47
14,637.0	89.90	179.60	11,555.5	-3,266.7	24.8	3,266.8	0.80	-0.32	0.74
14,732.0	90.00	178.40	11,555.6	-3,361.7	26.4	3,361.8	1.27	0.11	-1.26
14,827.0	90.10	178.20	11,555.5	-3,456.7	29.2	3,456.8	0.24	0.11	-0.21
14,921.0	90.00	179.10	11,555.4	-3,550.6	31.4	3,550.8	0.96	-0.11	0.96
15,017.0	90.70	177.90	11,554.8	-3,646.6	34.0	3,646.8	1.45	0.73	-1.25
15,112.0	90.20	177.80	11,554.1	-3,741.5	37.5	3,741.7	0.54	-0.53	-0.11
15,207.0	89.10	178.10	11,554.6	-3,836.5	40.9	3,836.7	1.20	-1.16	0.32

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Site:	Warrior "BRW" State Com	MD Reference:	RKB @ 3389.0usft (Cactus 124 - KB=25)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,301.0	90.20	179.20	11,555.2	-3,930.4	43.1	3,930.7	1.65	1.17	1.17
15,391.0	91.00	179.40	11,554.3	-4,020.4	44.2	4,020.7	0.92	0.89	0.22
15,486.0	90.90	179.30	11,552.7	-4,115.4	45.3	4,115.7	0.15	-0.11	-0.11
15,580.0	90.50	179.30	11,551.5	-4,209.4	46.5	4,209.7	0.43	-0.43	0.00
15,675.0	90.50	179.20	11,550.7	-4,304.4	47.7	4,304.6	0.11	0.00	-0.11
15,770.0	90.50	179.10	11,549.9	-4,399.4	49.1	4,399.6	0.11	0.00	-0.11
15,865.0	90.20	178.90	11,549.3	-4,494.4	50.8	4,494.6	0.38	-0.32	-0.21
15,932.0	89.80	178.90	11,549.3	-4,561.3	52.1	4,561.6	0.60	-0.60	0.00
Final MWD Survey: 15932.00' MD, 11549.31' TVD, -4561.34' +N-S, 52.06' +E-W									
15,990.0	89.80	178.90	11,549.5	-4,619.3	53.2	4,619.6	0.00	0.00	0.00
BHL: 15990.00' MD, 11549.51' TVD, 89.80° INC, 178.90° AZ, -4619.33' +N-S, 53.17' +E-W, 4619.63' VS - TD: 15990.00' MD, 11549.51' TVD -									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
11,101.0	11,100.3	21.6	6.5	KOP: 11101.00' MD, 11100.34' TVD
11,213.3	11,210.1	-0.1	11.3	Cross 330' Hardline: 11213.30' MD, 11210.12' TVD, 17.98° INC
11,860.0	11,560.8	-490.4	6.5	EOC: 11860.00' MD, 11560.79' TVD, 87.50° INC, 180.40° AZ, 490.40' VS
15,932.0	11,549.3	-4,561.3	52.1	Final MWD Survey: 15932.00' MD, 11549.31' TVD, -4561.34' +N-S, 52.06' +E-W
15,990.0	11,549.5	-4,619.3	53.2	BHL: 15990.00' MD, 11549.51' TVD, 89.80° INC, 178.90° AZ, -4619.33' +N-S, 53.17' +E-W
15,990.0	11,549.5	-4,619.3	53.2	TD: 15990.00' MD, 11549.51' TVD

Checked By: _____	Approved By: _____	Date: _____
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Yates Petroleum
Project: Lea County, NM (NAD-83)
Site: Warrior "BRW" State Com
Well: #1H
Wellbore: OH
Plan: Plan #2 (#1H/OH)

WELL DETAILS: #1H

Ground Elevation:: 3364.0
RKB Elevation: RKB @ 3389.0usft (Cactus 124 - KB=25)
Rig Name: Cactus 124 - KB=25

Surface Hole Location
Northing 467618.43 Easting 836282.74 Latitude 32° 16' 55.022 N Longitude 103° 22' 44.211 W



Azimuths to Grid North
True North: -0.51°
Magnetic North: 6.59°

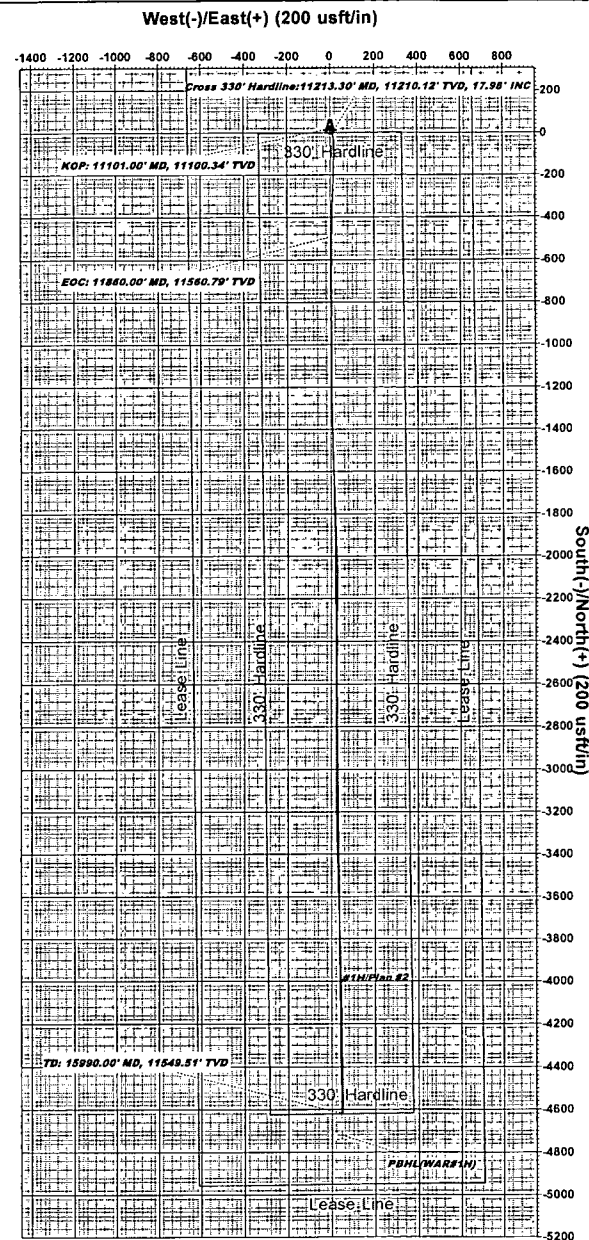
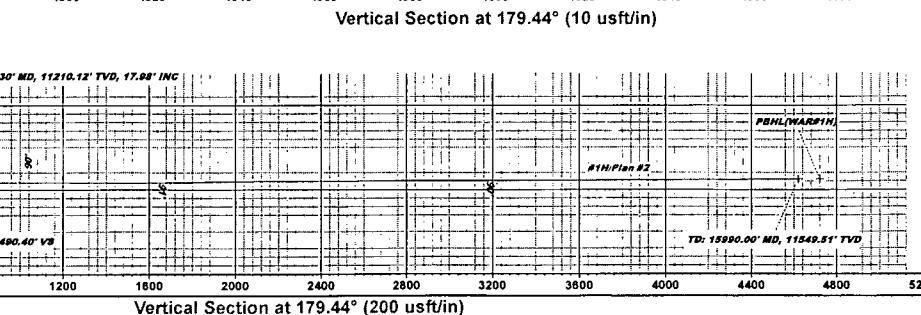
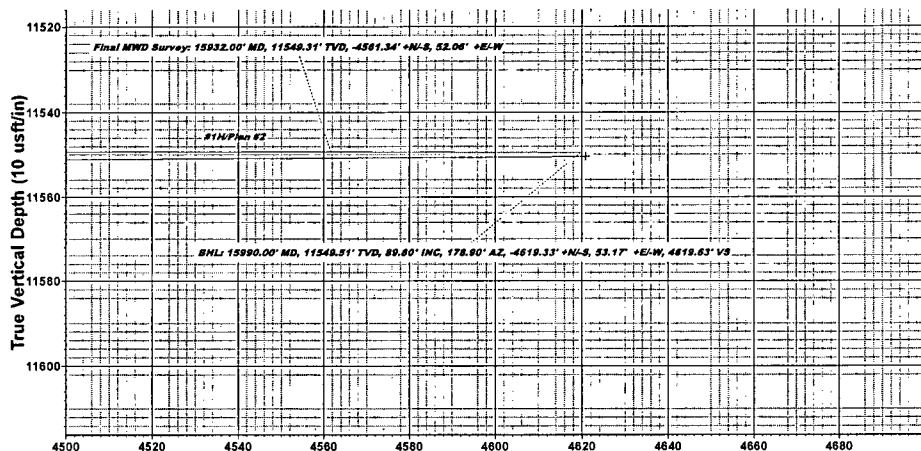
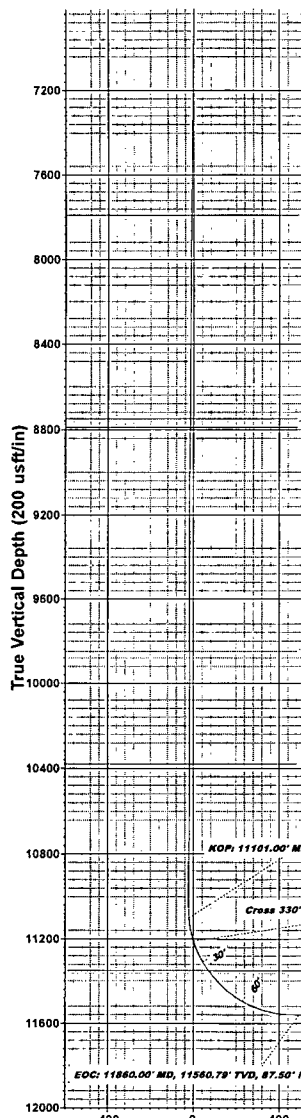
Magnetic Field
Strength: 48347.2snT
Dip Angle: 60.19°
Date: 9/12/2014
Model: IGRF2010

Section Details

	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	12743.0	89.20	179.10	11567.8	-1373.2	6.8	0.00	0.00	1373.2
2	12803.0	89.20	179.10	11568.6	-1433.2	7.8	0.00	0.00	1433.2
3	12886.0	90.80	178.66	11568.6	-1516.2	9.4	2.00	-15.38	1516.2
4	13256.0	90.80	178.66	11563.5	-1886.0	18.0	0.00	0.00	1886.1
5	13303.1	90.27	179.44	11563.0	-1933.2	18.8	2.00	124.43	1933.3
6	15990.7	90.27	179.44	11550.5	-4620.6	45.2	0.00	0.00	4620.8

DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting
PBHL(WARF#1)20.5	45.2	462897.90	836328.90	
TD(WARF#1H)-4620.6	45.2	462997.83	836327.93	



PROJECT DETAILS: Lea County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid



Crescent Directional Drilling
7715 West Industrial Ave. Midland, Tx 79706
Phone: 432-618-1135

Plan: Plan #2 (#1H/OH)
Created By: Adrian Castro Date: 8:34, October 24 2014