

HOBBSCO

MAR 09 2015

RECEIVED

Yates Petroleum

Lea County, NM (NAD-83)

Caravan State Unit

#6H

OH

Design: OH

Standard Survey Report

12 December, 2014

MAR 17 2015

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Well:	#6H	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		Caravan State Unit			
Site Position:		Northing:	430,472.90 usft	Latitude:	32° 10' 52.428 N
From:	Map	Easting:	773,064.80 usft	Longitude:	103° 35' 3.586 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.40 °

Well	#6H					
Well Position	+N/-S	0.0 usft	Northing:	430,480.30 usft	Latitude:	32° 10' 52.396 N
	+E/-W	0.0 usft	Easting:	774,594.50 usft	Longitude:	103° 34' 45.787 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,480.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	9/24/2014	7.18	60.06	48,261

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	359.60	

Survey Program	Date	12/12/2014			
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
100.0	1,200.0	Survey #1 -Gyro (OH)	CB-GYRO-MS	Camera based gyro multishot	
1,249.0	15,872.0	Survey #2 - Crescent MWD Surveys (OH)	MWD	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	
Caravan #9H										
100.0	0.16	40.17	100.0	0.1	0.1	0.1	0.16	0.16	0.00	
200.0	0.34	22.06	200.0	0.5	0.3	0.5	0.19	0.18	-18.11	
300.0	0.33	63.22	300.0	0.9	0.7	0.9	0.24	-0.01	41.16	
400.0	0.24	65.79	400.0	1.1	1.1	1.1	0.09	-0.09	2.57	
500.0	0.18	65.94	500.0	1.3	1.4	1.2	0.06	-0.06	0.15	
600.0	0.19	69.18	600.0	1.4	1.7	1.4	0.01	0.01	3.24	
700.0	0.43	68.98	700.0	1.6	2.2	1.6	0.24	0.24	-0.20	
800.0	0.42	39.19	800.0	2.0	2.8	2.0	0.22	-0.01	-29.79	

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Well:	#6H	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)
900.0	0.24	28.39	900.0	2.5	3.2	2.4	0.19	-0.18	-10.80
1,000.0	0.25	87.70	1,000.0	2.7	3.5	2.6	0.24	0.01	59.31
1,100.0	0.25	84.52	1,100.0	2.7	3.9	2.7	0.01	0.00	-3.18
1,200.0	0.09	43.28	1,200.0	2.8	4.2	2.7	0.19	-0.16	-41.24
1,249.0	0.30	310.70	1,249.0	2.9	4.1	2.8	0.65	0.43	-188.94
1,438.0	0.10	287.20	1,438.0	3.2	3.6	3.2	0.11	-0.11	-12.43
1,627.0	0.30	295.10	1,627.0	3.5	3.0	3.5	0.11	0.11	4.18
1,817.0	0.50	263.80	1,817.0	3.6	1.7	3.6	0.15	0.11	-16.47
2,007.0	0.70	264.80	2,007.0	3.4	-0.3	3.4	0.11	0.11	0.53
2,196.0	0.80	139.10	2,196.0	2.3	-0.6	2.3	0.71	0.05	-66.51
2,387.0	0.70	136.50	2,386.9	0.5	1.1	0.5	0.06	-0.05	-1.36
2,576.0	0.40	169.70	2,575.9	-1.0	2.0	-1.0	0.23	-0.16	17.57
2,766.0	0.70	168.50	2,765.9	-2.8	2.4	-2.8	0.16	0.16	-0.63
2,955.0	0.10	133.20	2,954.9	-4.0	2.7	-4.1	0.33	-0.32	-18.68
3,145.0	0.70	170.70	3,144.9	-5.3	3.0	-5.3	0.33	0.32	19.74
3,335.0	0.30	44.10	3,334.9	-6.1	3.6	-6.1	0.48	-0.21	-66.63
3,524.0	0.30	144.60	3,523.9	-6.1	4.2	-6.2	0.24	0.00	53.17
3,713.0	0.20	90.20	3,712.9	-6.5	4.8	-6.6	0.13	-0.05	-28.78
3,903.0	0.20	324.00	3,902.9	-6.3	4.9	-6.3	0.19	0.00	-66.42
4,092.0	0.20	341.40	4,091.9	-5.7	4.6	-5.7	0.03	0.00	9.21
4,282.0	0.10	86.00	4,281.9	-5.4	4.7	-5.4	0.13	-0.05	55.05
4,471.0	0.40	134.50	4,470.9	-5.8	5.3	-5.9	0.18	0.16	25.66
4,661.0	0.50	136.70	4,660.9	-6.9	6.4	-6.9	0.05	0.05	1.16
4,850.0	1.10	131.60	4,849.9	-8.7	8.3	-8.8	0.32	0.32	-2.70
5,040.0	0.90	303.60	5,039.9	-9.1	8.4	-9.1	1.05	-0.11	90.53
5,156.0	0.50	307.70	5,155.9	-8.3	7.3	-8.3	0.35	-0.34	3.53
5,318.0	0.40	301.80	5,317.9	-7.5	6.2	-7.6	0.07	-0.06	-3.64
5,507.0	0.40	309.90	5,506.9	-6.8	5.2	-6.8	0.03	0.00	4.29
5,697.0	0.50	315.20	5,696.8	-5.8	4.1	-5.8	0.06	0.05	2.79
5,887.0	0.50	308.00	5,886.8	-4.7	2.8	-4.7	0.03	0.00	-3.79
6,076.0	0.40	315.20	6,075.8	-3.7	1.7	-3.7	0.06	-0.05	3.81
6,265.0	0.40	299.20	6,264.8	-2.9	0.7	-2.9	0.06	0.00	-8.47
6,454.0	0.50	303.60	6,453.8	-2.1	-0.6	-2.1	0.06	0.05	2.33
6,644.0	0.70	301.50	6,643.8	-1.0	-2.3	-1.0	0.11	0.11	-1.11
6,833.0	0.70	66.70	6,832.8	0.0	-2.2	0.0	0.66	0.00	66.24
7,022.0	0.40	70.50	7,021.8	0.7	-0.5	0.7	0.16	-0.16	2.01
7,211.0	0.40	99.70	7,210.8	0.8	0.8	0.8	0.11	0.00	15.45
7,399.0	0.40	132.70	7,398.8	0.2	1.9	0.2	0.12	0.00	17.55
7,589.0	0.30	138.10	7,588.8	-0.6	2.7	-0.6	0.06	-0.05	2.84
7,777.0	0.60	219.90	7,776.8	-1.7	2.4	-1.7	0.34	0.16	43.51
7,966.0	0.40	208.80	7,965.8	-3.0	1.5	-3.0	0.12	-0.11	-5.87
8,155.0	0.40	186.30	8,154.8	-4.3	1.1	-4.3	0.08	0.00	-11.90
8,345.0	0.40	178.40	8,344.8	-5.6	1.0	-5.6	0.03	0.00	-4.16

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Well:	#6H	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)
8,534.0	0.40	184.70	8,533.8	-6.9	1.0	-6.9	0.02	0.00	3.33
8,723.0	0.40	193.60	8,722.8	-8.2	0.8	-8.2	0.03	0.00	4.71
8,913.0	0.40	209.90	8,912.7	-9.4	0.3	-9.4	0.06	0.00	8.58
9,101.0	0.20	14.90	9,100.7	-9.7	0.0	-9.7	0.32	-0.11	87.77
9,290.0	1.10	312.40	9,289.7	-8.1	-1.2	-8.1	0.54	0.48	-33.07
9,479.0	0.40	163.70	9,478.7	-7.5	-2.4	-7.5	0.77	-0.37	-78.68
9,661.0	0.40	6.20	9,660.7	-7.5	-2.1	-7.5	0.43	0.00	-86.54
9,756.0	1.40	44.10	9,755.7	-6.4	-1.3	-6.4	1.17	1.05	39.89
9,850.0	0.50	120.10	9,849.7	-5.7	-0.1	-5.7	1.46	-0.96	80.85
9,943.0	0.50	65.80	9,942.7	-5.8	0.6	-5.8	0.49	0.00	-58.39
10,038.0	1.10	163.70	10,037.7	-6.5	1.2	-6.5	1.34	0.63	103.05
10,133.0	1.10	184.90	10,132.7	-8.3	1.4	-8.3	0.43	0.00	22.32
10,228.0	0.90	185.70	10,227.7	-9.9	1.3	-9.9	0.21	-0.21	0.84
10,323.0	0.90	172.20	10,322.6	-11.4	1.3	-11.4	0.22	0.00	-14.21
10,418.0	0.90	177.80	10,417.6	-12.9	1.4	-12.9	0.09	0.00	5.89
10,513.0	0.90	255.20	10,512.6	-13.8	0.7	-13.8	1.18	0.00	81.47
10,592.0	2.00	328.30	10,591.6	-12.8	-0.6	-12.8	2.46	1.39	92.53
KOP: 10592.0' MD, 10591.6' TVD									
10,637.0	8.20	353.00	10,636.4	-8.9	-1.4	-8.9	14.30	13.78	54.89
10,685.0	14.80	356.90	10,683.4	0.6	-2.2	0.6	13.84	13.75	8.13
10,732.0	19.60	358.70	10,728.3	14.5	-2.7	14.5	10.27	10.21	3.83
10,779.0	23.80	0.50	10,772.0	31.8	-2.8	31.9	9.05	8.94	3.83
10,826.0	28.90	2.00	10,814.1	52.7	-2.3	52.7	10.94	10.85	3.19
10,874.0	34.20	0.00	10,855.0	77.8	-1.9	77.8	11.25	11.04	-4.17
10,921.0	39.60	357.70	10,892.5	106.0	-2.5	106.0	11.86	11.49	-4.89
10,968.0	45.30	357.00	10,927.2	137.7	-4.0	137.7	12.17	12.13	-1.49
11,015.0	50.30	356.80	10,958.8	172.4	-5.8	172.4	10.64	10.64	-0.43
11,063.0	55.10	358.30	10,987.8	210.5	-7.5	210.6	10.30	10.00	3.13
11,110.0	61.00	359.00	11,012.7	250.4	-8.4	250.5	12.62	12.55	1.49
11,157.0	67.30	359.80	11,033.2	292.7	-8.8	292.7	13.49	13.40	1.70
11,205.0	72.90	0.80	11,049.5	337.8	-8.6	337.8	11.83	11.67	2.08
11,246.0	77.26	1.15	11,060.1	377.4	-7.9	377.4	10.67	10.64	0.85
Cross 330' Hardline: 11246.0' MD, 11060.1' TVD, 77.26° INC									
11,252.0	77.90	1.20	11,061.4	383.2	-7.8	383.3	10.67	10.64	0.84
11,299.0	83.20	1.20	11,069.1	429.6	-6.8	429.6	11.28	11.28	0.00
11,330.0	87.80	0.80	11,071.5	460.5	-6.3	460.5	14.89	14.84	-1.29
11,349.0	89.90	0.40	11,071.9	479.5	-6.1	479.5	11.25	11.05	-2.11
11,425.0	90.30	0.70	11,071.8	555.5	-5.3	555.5	0.66	0.53	0.39
EOC: 11425.0' MD, 11071.8' TVD, 90.30° INC, 0.70° AZ, 555.5' VS									
11,520.0	90.00	0.30	11,071.5	650.5	-4.5	650.5	0.53	-0.32	-0.42
11,615.0	89.50	0.30	11,071.9	745.5	-4.0	745.5	0.53	-0.53	0.00
11,710.0	89.00	0.10	11,073.2	840.4	-3.7	840.5	0.57	-0.53	-0.21
11,804.0	90.00	0.30	11,074.0	934.4	-3.4	934.4	1.08	1.06	0.21
11,898.0	91.20	358.90	11,073.0	1,028.4	-4.0	1,028.4	1.96	1.28	-1.49

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Well:	#6H	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)	
11,993.0	91.40	358.40	11,070.8	1,123.4	-6.2	1,123.4	0.57	0.21	-0.53	
12,088.0	90.50	359.70	11,069.3	1,218.4	-7.8	1,218.4	1.66	-0.95	1.37	
12,183.0	90.20	0.00	11,068.7	1,313.3	-8.1	1,313.4	0.45	-0.32	0.32	
12,278.0	90.30	0.50	11,068.3	1,408.3	-7.7	1,408.4	0.54	0.11	0.53	
12,373.0	89.80	0.50	11,068.2	1,503.3	-6.8	1,503.4	0.53	-0.53	0.00	
12,467.0	90.30	359.40	11,068.1	1,597.3	-6.9	1,597.4	1.29	0.53	-1.17	
12,562.0	90.50	359.20	11,067.4	1,692.3	-8.1	1,692.3	0.30	0.21	-0.21	
12,657.0	90.70	359.90	11,066.4	1,787.3	-8.8	1,787.3	0.77	0.21	0.74	
12,751.0	90.90	359.80	11,065.1	1,881.3	-9.1	1,881.3	0.24	0.21	-0.11	
12,846.0	89.90	359.10	11,064.5	1,976.3	-10.0	1,976.3	1.28	-1.05	-0.74	
12,939.0	90.00	359.20	11,064.6	2,069.3	-11.4	2,069.3	0.15	0.11	0.11	
13,034.0	90.00	359.50	11,064.6	2,164.3	-12.4	2,164.3	0.32	0.00	0.32	
13,129.0	89.90	359.70	11,064.6	2,259.3	-13.1	2,259.3	0.24	-0.11	0.21	
13,223.0	89.70	358.90	11,065.0	2,353.3	-14.2	2,353.3	0.88	-0.21	-0.85	
13,318.0	90.00	359.20	11,065.2	2,448.3	-15.8	2,448.3	0.45	0.32	0.32	
13,413.0	90.00	358.80	11,065.2	2,543.3	-17.5	2,543.3	0.42	0.00	-0.42	
13,508.0	89.90	358.90	11,065.3	2,638.2	-19.4	2,638.3	0.15	-0.11	0.11	
13,602.0	89.50	358.00	11,065.8	2,732.2	-21.9	2,732.3	1.05	-0.43	-0.96	
13,697.0	90.40	359.10	11,065.9	2,827.2	-24.3	2,827.3	1.50	0.95	1.16	
13,792.0	90.50	359.20	11,065.1	2,922.1	-25.7	2,922.3	0.15	0.11	0.11	
13,886.0	90.20	358.50	11,064.6	3,016.1	-27.6	3,016.2	0.81	-0.32	-0.74	
13,982.0	91.40	0.00	11,063.2	3,112.1	-28.9	3,112.2	2.00	1.25	1.56	
14,076.0	91.70	359.90	11,060.7	3,206.1	-29.0	3,206.2	0.34	0.32	-0.11	
14,171.0	91.10	0.30	11,058.3	3,301.0	-28.8	3,301.2	0.76	-0.63	0.42	
14,266.0	89.50	1.10	11,057.9	3,396.0	-27.6	3,396.1	1.88	-1.68	0.84	
14,360.0	89.30	0.70	11,058.8	3,490.0	-26.2	3,490.1	0.48	-0.21	-0.43	
14,455.0	89.40	1.50	11,059.9	3,585.0	-24.3	3,585.1	0.85	0.11	0.84	
14,549.0	89.80	1.20	11,060.6	3,679.0	-22.1	3,679.0	0.53	0.43	-0.32	
14,644.0	89.90	1.20	11,060.8	3,773.9	-20.1	3,774.0	0.11	0.11	0.00	
14,739.0	90.00	1.50	11,060.9	3,868.9	-17.9	3,868.9	0.33	0.11	0.32	
14,834.0	88.30	0.00	11,062.3	3,963.9	-16.7	3,963.9	2.39	-1.79	-1.58	
14,929.0	89.90	358.70	11,063.8	4,058.9	-17.7	4,058.9	2.17	1.68	-1.37	
15,022.0	90.10	359.00	11,063.8	4,151.8	-19.6	4,151.9	0.39	0.22	0.32	
15,117.0	90.20	358.50	11,063.6	4,246.8	-21.7	4,246.9	0.54	0.11	-0.53	
15,212.0	89.70	359.00	11,063.6	4,341.8	-23.7	4,341.9	0.74	-0.53	0.53	
15,306.0	91.20	358.00	11,062.9	4,435.8	-26.2	4,435.8	1.92	1.60	-1.06	
15,401.0	91.10	358.30	11,061.0	4,530.7	-29.3	4,530.8	0.33	-0.11	0.32	
15,497.0	91.10	358.30	11,059.1	4,626.6	-32.1	4,626.7	0.00	0.00	0.00	
15,591.0	91.10	357.70	11,057.3	4,720.6	-35.4	4,720.7	0.64	0.00	-0.64	
15,685.0	90.50	359.80	11,056.0	4,814.5	-37.4	4,814.7	2.32	-0.64	2.23	
15,780.0	90.30	359.70	11,055.4	4,909.5	-37.9	4,909.7	0.24	-0.21	-0.11	
15,814.0	90.00	359.40	11,055.3	4,943.5	-38.1	4,943.7	1.25	-0.88	-0.88	
Final MWD Survey: 15814.0' MD, 11055.3' TVD										

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Well:	#6H	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)
15,872.0	90.00	359.40	11,055.3	5,001.5	-38.7	5,001.7	0.00	0.00	0.00
BHL: 15872.0' MD, 11055.3' TVD, 90.00° INC, 359.40° AZ, 5001.5' +N-S, -38.7' +E-W, 5001.7' VS - PBHL(CSU#6H)									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
10,592.0	10,591.6	-12.8	-0.6	KOP: 10592.0' MD, 10591.6' TVD
11,246.0	11,060.1	377.4	-7.9	Cross 330' Hardline: 11246.0' MD, 11060.1' TVD, 77.26° INC
11,425.0	11,071.8	555.5	-5.3	EOC: 11425.0' MD, 11071.8' TVD, 90.30° INC, 0.70° AZ, 555.5' VS
15,814.0	11,055.3	4,943.5	-38.1	Final MWD Survey: 15814.0' MD, 11055.3' TVD
15,872.0	11,055.3	5,001.5	-38.7	BHL: 15872.0' MD, 11055.3' TVD, 90.00° INC, 359.40° AZ, 5001.5' +N-S, -38.7

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------



Yates Petroleum
Project: Lea County, NM (NAD-83)
Site: Caravan State Unit
Well: #6H
Wellbore: OH
Plan: Plan #1 (#6H/OH)

WELL DETAILS: #6H

Ground Elevation:: 3480.0
RKB Elevation: RKB @ 3505.0usft (Cactus 124 - KB=25')
Rig Name: Cactus 124 - KB=25'

Surface Hole Location
Northing Easting Latitude Longitude
430480.30 774594.50 32° 10' 52.396 N 103° 34' 45.787 W



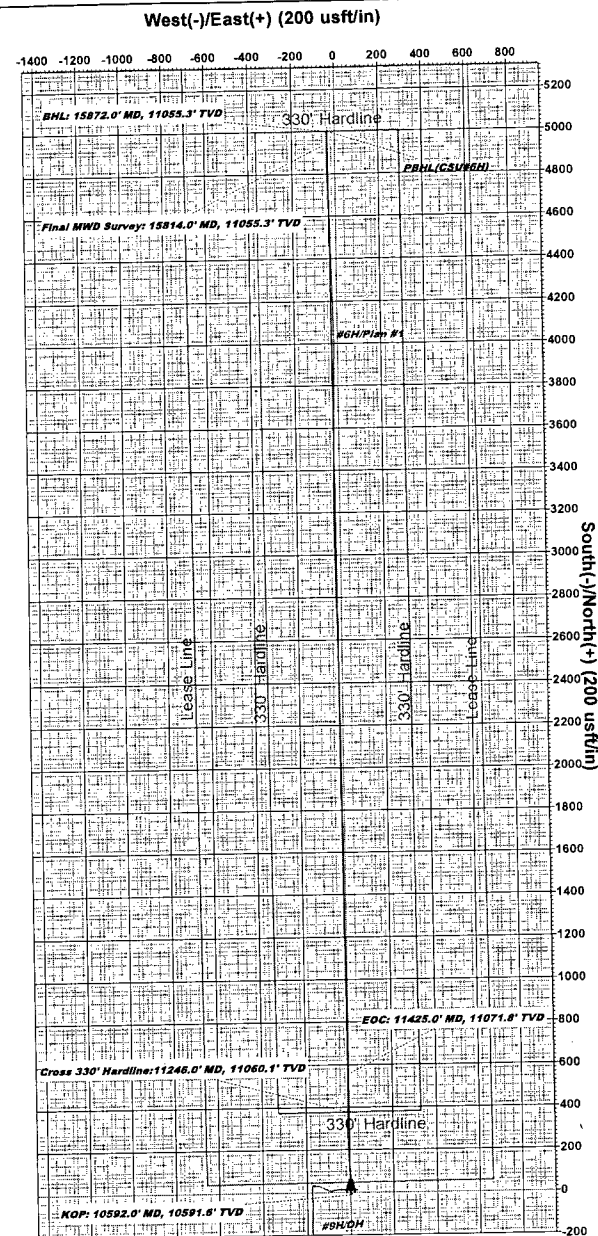
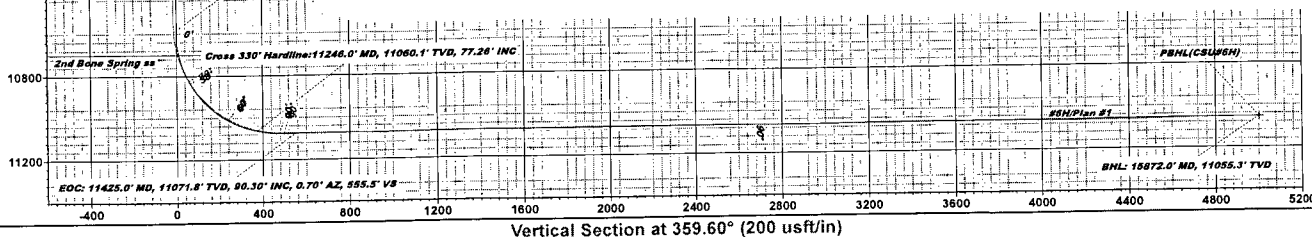
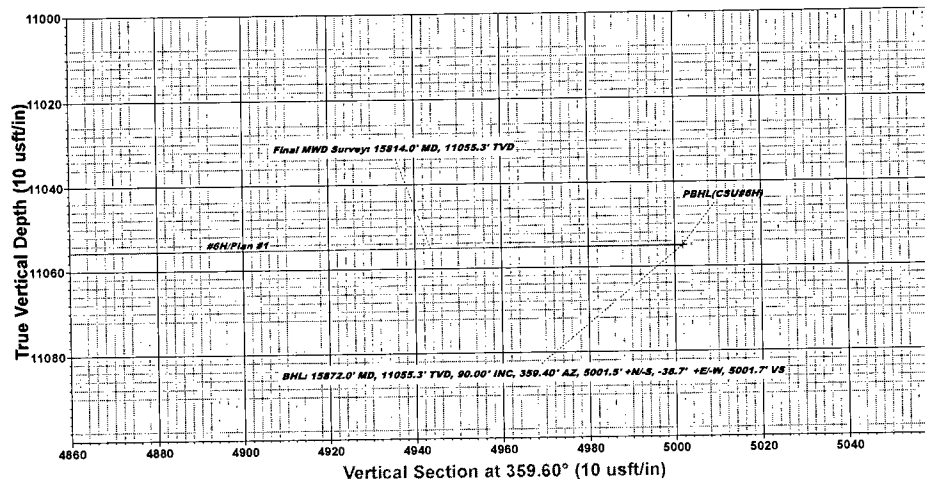
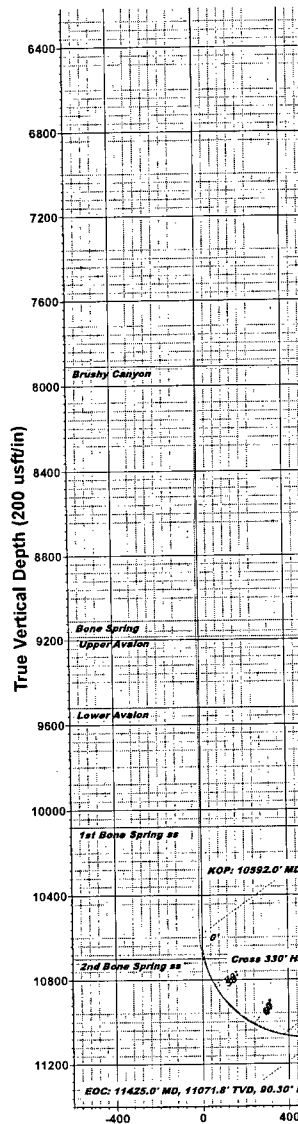
Azimuths to Grid North
True North: -0.40°
Magnetic North: 6.78°
Magnetic Field
Strength: 48261.4snT
Dip Angle: 60.06°
Date: 9/24/2014
Model: IGRF2010

Section Details

	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	10597.5	0.00	0.00	10597.5	0.0	0.0	0.00	0.00	0.0
3	11349.6	90.25	359.60	11075.0	479.6	-3.3	12.00	359.60	479.6
4	15872.0	90.25	359.60	11055.0	5001.8	-34.8	0.00	0.00	5001.9

DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting
Caravan #6H	11.5	-20.0	430491.80	774574.50
PBHL(CSUF6H)	5001.8	-34.8	435482.10	774559.70



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 #1 (#6H/OH)
Created By: Adrian Castro Date: 8:29, December 12 2014

HOBBS OCD
MAR 09 2015
RECEIVED

Yates Petroleum

Lea County, NM (NAD-83)

Caravan State Unit

#6H

OH

Design: OH

Survey Report - Geographic

12 December, 2014

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Well:	#6H	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		Caravan State Unit			
Site Position:		Northing:	430,472.90 usft	Latitude:	32° 10' 52.428 N
From:	Map	Easting:	773,064.80 usft	Longitude:	103° 35' 3.586 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.40 °

Well	#6H					
Well Position	+N/-S	0.0 usft	Northing:	430,480.30 usft	Latitude:	32° 10' 52.396 N
	+E/-W	0.0 usft	Easting:	774,594.50 usft	Longitude:	103° 34' 45.787 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,480.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	9/24/2014	7.18	60.06	48,261

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	359.60	

Survey Program	Date 12/12/2014			
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100.0	1,200.0	Survey #1 -Gyro (OH)	CB-GYRO-MS	Camera based gyro multishot
1,249.0	15,872.0	Survey #2 - Crescent MWD Surveys (OH)	MWD	MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map	Latitude	Longitude	
Depth	(°)	(°)	Depth	(usft)	(usft)	Northing	Easting			
(usft)			(usft)			(usft)	(usft)			
0.0	0.00	0.00	0.0	0.0	0.0	430,480.30	774,594.50	32° 10' 52.396 N	103° 34' 45.787 W	
Caravan #9H										
100.0	0.16	40.17	100.0	0.1	0.1	430,480.41	774,594.59	32° 10' 52.397 N	103° 34' 45.786 W	
200.0	0.34	22.06	200.0	0.5	0.3	430,480.79	774,594.79	32° 10' 52.400 N	103° 34' 45.783 W	
300.0	0.33	63.22	300.0	0.9	0.7	430,481.19	774,595.16	32° 10' 52.404 N	103° 34' 45.779 W	
400.0	0.24	65.79	400.0	1.1	1.1	430,481.41	774,595.61	32° 10' 52.407 N	103° 34' 45.774 W	
500.0	0.18	65.94	500.0	1.3	1.4	430,481.56	774,595.94	32° 10' 52.408 N	103° 34' 45.770 W	
600.0	0.19	69.18	600.0	1.4	1.7	430,481.68	774,596.24	32° 10' 52.409 N	103° 34' 45.766 W	
700.0	0.43	68.98	700.0	1.6	2.2	430,481.87	774,596.74	32° 10' 52.411 N	103° 34' 45.760 W	
800.0	0.42	39.19	800.0	2.0	2.8	430,482.29	774,597.33	32° 10' 52.415 N	103° 34' 45.754 W	
900.0	0.24	28.39	900.0	2.5	3.2	430,482.76	774,597.66	32° 10' 52.420 N	103° 34' 45.750 W	

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Well:	#6H	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
1,000.0	0.25	87.70	1,000.0	2.7	3.5	430,482.95	774,597.97	32° 10' 52.422 N	103° 34' 45.746 W
1,100.0	0.25	84.52	1,100.0	2.7	3.9	430,482.98	774,598.41	32° 10' 52.422 N	103° 34' 45.741 W
1,200.0	0.09	43.28	1,200.0	2.8	4.2	430,483.06	774,598.68	32° 10' 52.423 N	103° 34' 45.738 W
1,249.0	0.30	310.70	1,249.0	2.9	4.1	430,483.17	774,598.61	32° 10' 52.424 N	103° 34' 45.739 W
1,438.0	0.10	287.20	1,438.0	3.2	3.6	430,483.55	774,598.08	32° 10' 52.428 N	103° 34' 45.745 W
1,627.0	0.30	295.10	1,627.0	3.5	3.0	430,483.80	774,597.47	32° 10' 52.430 N	103° 34' 45.752 W
1,817.0	0.50	263.80	1,817.0	3.6	1.7	430,483.93	774,596.20	32° 10' 52.431 N	103° 34' 45.767 W
2,007.0	0.70	264.80	2,007.0	3.4	-0.3	430,483.73	774,594.22	32° 10' 52.430 N	103° 34' 45.790 W
2,196.0	0.80	139.10	2,196.0	2.3	-0.6	430,482.63	774,593.93	32° 10' 52.419 N	103° 34' 45.793 W
2,387.0	0.70	136.50	2,386.9	0.5	1.1	430,480.77	774,595.61	32° 10' 52.400 N	103° 34' 45.774 W
2,576.0	0.40	169.70	2,575.9	-1.0	2.0	430,479.29	774,596.52	32° 10' 52.385 N	103° 34' 45.763 W
2,766.0	0.70	168.50	2,765.9	-2.8	2.4	430,477.50	774,596.87	32° 10' 52.368 N	103° 34' 45.759 W
2,955.0	0.10	133.20	2,954.9	-4.0	2.7	430,476.25	774,597.22	32° 10' 52.355 N	103° 34' 45.755 W
3,145.0	0.70	170.70	3,144.9	-5.3	3.0	430,475.00	774,597.53	32° 10' 52.343 N	103° 34' 45.752 W
3,335.0	0.30	44.10	3,334.9	-6.1	3.6	430,474.21	774,598.06	32° 10' 52.335 N	103° 34' 45.746 W
3,524.0	0.30	144.60	3,523.9	-6.1	4.2	430,474.16	774,598.69	32° 10' 52.335 N	103° 34' 45.738 W
3,713.0	0.20	90.20	3,712.9	-6.5	4.8	430,473.75	774,599.31	32° 10' 52.331 N	103° 34' 45.731 W
3,903.0	0.20	324.00	3,902.9	-6.3	4.9	430,474.02	774,599.45	32° 10' 52.333 N	103° 34' 45.730 W
4,092.0	0.20	341.40	4,091.9	-5.7	4.6	430,474.60	774,599.15	32° 10' 52.339 N	103° 34' 45.733 W
4,282.0	0.10	86.00	4,281.9	-5.4	4.7	430,474.93	774,599.21	32° 10' 52.342 N	103° 34' 45.732 W
4,471.0	0.40	134.50	4,470.9	-5.8	5.3	430,474.48	774,599.84	32° 10' 52.338 N	103° 34' 45.725 W
4,661.0	0.50	136.70	4,660.9	-6.9	6.4	430,473.41	774,600.88	32° 10' 52.327 N	103° 34' 45.713 W
4,850.0	1.10	131.60	4,849.9	-8.7	8.3	430,471.60	774,602.81	32° 10' 52.309 N	103° 34' 45.691 W
5,040.0	0.90	303.60	5,039.9	-9.1	8.4	430,471.22	774,602.93	32° 10' 52.305 N	103° 34' 45.689 W
5,156.0	0.50	307.70	5,155.9	-8.3	7.3	430,472.03	774,601.77	32° 10' 52.313 N	103° 34' 45.703 W
5,318.0	0.40	301.80	5,317.9	-7.5	6.2	430,472.76	774,600.73	32° 10' 52.321 N	103° 34' 45.715 W
5,507.0	0.40	309.90	5,506.9	-6.8	5.2	430,473.53	774,599.66	32° 10' 52.328 N	103° 34' 45.727 W
5,697.0	0.50	315.20	5,696.8	-5.8	4.1	430,474.55	774,598.57	32° 10' 52.338 N	103° 34' 45.740 W
5,887.0	0.50	308.00	5,886.8	-4.7	2.8	430,475.65	774,597.33	32° 10' 52.349 N	103° 34' 45.754 W
6,076.0	0.40	315.20	6,075.8	-3.7	1.7	430,476.62	774,596.22	32° 10' 52.359 N	103° 34' 45.767 W
6,265.0	0.40	299.20	6,264.8	-2.9	0.7	430,477.41	774,595.17	32° 10' 52.367 N	103° 34' 45.779 W
6,454.0	0.50	303.60	6,453.8	-2.1	-0.6	430,478.19	774,593.91	32° 10' 52.375 N	103° 34' 45.794 W
6,644.0	0.70	301.50	6,643.8	-1.0	-2.3	430,479.25	774,592.23	32° 10' 52.385 N	103° 34' 45.813 W
6,833.0	0.70	66.70	6,832.8	0.0	-2.2	430,480.31	774,592.31	32° 10' 52.396 N	103° 34' 45.812 W
7,022.0	0.40	70.50	7,021.8	0.7	-0.5	430,480.99	774,593.99	32° 10' 52.403 N	103° 34' 45.793 W
7,211.0	0.40	99.70	7,210.8	0.8	0.8	430,481.10	774,595.26	32° 10' 52.404 N	103° 34' 45.778 W
7,399.0	0.40	132.70	7,398.8	0.2	1.9	430,480.54	774,596.39	32° 10' 52.398 N	103° 34' 45.765 W
7,589.0	0.30	138.10	7,588.8	-0.6	2.7	430,479.72	774,597.21	32° 10' 52.390 N	103° 34' 45.755 W
7,777.0	0.60	219.90	7,776.8	-1.7	2.4	430,478.60	774,596.91	32° 10' 52.379 N	103° 34' 45.759 W
7,966.0	0.40	208.80	7,965.8	-3.0	1.5	430,477.27	774,595.96	32° 10' 52.366 N	103° 34' 45.770 W
8,155.0	0.40	186.30	8,154.8	-4.3	1.1	430,476.03	774,595.57	32° 10' 52.353 N	103° 34' 45.775 W
8,345.0	0.40	178.40	8,344.8	-5.6	1.0	430,474.71	774,595.51	32° 10' 52.340 N	103° 34' 45.775 W
8,534.0	0.40	184.70	8,533.8	-6.9	1.0	430,473.39	774,595.48	32° 10' 52.327 N	103° 34' 45.776 W
8,723.0	0.40	193.60	8,722.8	-8.2	0.8	430,472.09	774,595.27	32° 10' 52.314 N	103° 34' 45.778 W
8,913.0	0.40	209.90	8,912.7	-9.4	0.3	430,470.87	774,594.78	32° 10' 52.302 N	103° 34' 45.784 W
9,101.0	0.20	14.90	9,100.7	-9.7	0.0	430,470.62	774,594.54	32° 10' 52.300 N	103° 34' 45.787 W
9,290.0	1.10	312.40	9,289.7	-8.1	-1.2	430,472.16	774,593.28	32° 10' 52.315 N	103° 34' 45.802 W
9,479.0	0.40	163.70	9,478.7	-7.5	-2.4	430,472.76	774,592.13	32° 10' 52.321 N	103° 34' 45.815 W
9,661.0	0.40	6.20	9,660.7	-7.5	-2.1	430,472.78	774,592.37	32° 10' 52.321 N	103° 34' 45.812 W
9,756.0	1.40	44.10	9,755.7	-6.4	-1.3	430,473.94	774,593.22	32° 10' 52.333 N	103° 34' 45.802 W
9,850.0	0.50	120.10	9,849.7	-5.7	-0.1	430,474.56	774,594.37	32° 10' 52.339 N	103° 34' 45.789 W
9,943.0	0.50	65.80	9,942.7	-5.8	0.6	430,474.52	774,595.09	32° 10' 52.338 N	103° 34' 45.780 W
10,038.0	1.10	163.70	10,037.7	-6.5	1.2	430,473.82	774,595.73	32° 10' 52.331 N	103° 34' 45.773 W
10,133.0	1.10	184.90	10,132.7	-8.3	1.4	430,472.03	774,595.91	32° 10' 52.314 N	103° 34' 45.771 W
10,228.0	0.90	185.70	10,227.7	-9.9	1.3	430,470.38	774,595.75	32° 10' 52.297 N	103° 34' 45.773 W

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Well:	#6H	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
10,323.0	0.90	172.20	10,322.6	-11.4	1.3	430,468.90	774,595.78	32° 10' 52.283 N	103° 34' 45.773 W
10,418.0	0.90	177.80	10,417.6	-12.9	1.4	430,467.42	774,595.91	32° 10' 52.268 N	103° 34' 45.771 W
10,513.0	0.90	255.20	10,512.6	-13.8	0.7	430,466.48	774,595.22	32° 10' 52.259 N	103° 34' 45.780 W
10,592.0	2.00	328.30	10,591.6	-12.8	-0.6	430,467.49	774,593.89	32° 10' 52.269 N	103° 34' 45.795 W
KOP: 10592.0' MD, 10591.6' TVD									
10,637.0	8.20	353.00	10,636.4	-8.9	-1.4	430,471.35	774,593.09	32° 10' 52.307 N	103° 34' 45.804 W
10,685.0	14.80	356.90	10,683.4	0.6	-2.2	430,480.88	774,592.34	32° 10' 52.402 N	103° 34' 45.812 W
10,732.0	19.60	358.70	10,728.3	14.5	-2.7	430,494.76	774,591.84	32° 10' 52.539 N	103° 34' 45.817 W
10,779.0	23.80	0.50	10,772.0	31.8	-2.8	430,512.14	774,591.74	32° 10' 52.711 N	103° 34' 45.816 W
10,826.0	28.90	2.00	10,814.1	52.7	-2.3	430,532.98	774,592.22	32° 10' 54.102 N	103° 34' 45.809 W
10,874.0	34.20	0.00	10,855.0	77.8	-1.9	430,558.08	774,592.62	32° 10' 53.165 N	103° 34' 45.802 W
10,921.0	39.60	357.70	10,892.5	106.0	-2.5	430,586.28	774,592.02	32° 10' 53.445 N	103° 34' 45.807 W
10,968.0	45.30	357.00	10,927.2	137.7	-4.0	430,617.96	774,590.55	32° 10' 53.758 N	103° 34' 45.822 W
11,015.0	50.30	356.80	10,958.8	172.4	-5.8	430,652.71	774,588.66	32° 10' 54.102 N	103° 34' 45.841 W
11,063.0	55.10	358.30	10,987.8	210.5	-7.5	430,690.85	774,587.05	32° 10' 54.480 N	103° 34' 45.856 W
11,110.0	61.00	359.00	11,012.7	250.4	-8.4	430,730.70	774,586.11	32° 10' 54.874 N	103° 34' 45.864 W
11,157.0	67.30	359.80	11,033.2	292.7	-8.8	430,772.97	774,585.68	32° 10' 55.292 N	103° 34' 45.866 W
11,205.0	72.90	0.80	11,049.5	337.8	-8.6	430,818.09	774,585.92	32° 10' 55.739 N	103° 34' 45.859 W
11,246.0	77.26	1.15	11,060.1	377.4	-7.9	430,857.69	774,586.60	32° 10' 56.131 N	103° 34' 45.848 W
Cross 330' Hardline: 11246.0' MD, 11060.1' TVD, 77.26° INC									
11,252.0	77.90	1.20	11,061.4	383.2	-7.8	430,863.55	774,586.72	32° 10' 56.189 N	103° 34' 45.846 W
11,299.0	83.20	1.20	11,069.1	429.6	-6.8	430,909.88	774,587.69	32° 10' 56.647 N	103° 34' 45.831 W
11,330.0	87.80	0.80	11,071.5	460.5	-6.3	430,940.77	774,588.23	32° 10' 56.953 N	103° 34' 45.822 W
11,349.0	89.90	0.40	11,071.9	479.5	-6.1	430,959.77	774,588.43	32° 10' 57.141 N	103° 34' 45.818 W
11,425.0	90.30	0.70	11,071.8	555.5	-5.3	431,035.76	774,589.16	32° 10' 57.892 N	103° 34' 45.804 W
EOC: 11425.0' MD, 11071.8' TVD, 90.30° INC, 0.70° AZ, 555.5' VS									
11,520.0	90.00	0.30	11,071.5	650.5	-4.5	431,130.76	774,589.98	32° 10' 58.832 N	103° 34' 45.786 W
11,615.0	89.50	0.30	11,071.9	745.5	-4.0	431,225.76	774,590.48	32° 10' 59.772 N	103° 34' 45.773 W
11,710.0	89.00	0.10	11,073.2	840.4	-3.7	431,320.75	774,590.81	32° 11' 0.712 N	103° 34' 45.761 W
11,804.0	90.00	0.30	11,074.0	934.4	-3.4	431,414.74	774,591.14	32° 11' 1.642 N	103° 34' 45.750 W
11,898.0	91.20	358.90	11,073.0	1,028.4	-4.0	431,508.73	774,590.49	32° 11' 2.573 N	103° 34' 45.750 W
11,993.0	91.40	358.40	11,070.8	1,123.4	-6.2	431,603.68	774,588.25	32° 11' 3.512 N	103° 34' 45.768 W
12,088.0	90.50	359.70	11,069.3	1,218.4	-7.8	431,698.65	774,586.67	32° 11' 4.452 N	103° 34' 45.778 W
12,183.0	90.20	0.00	11,068.7	1,313.3	-8.1	431,793.65	774,586.42	32° 11' 5.392 N	103° 34' 45.774 W
12,278.0	90.30	0.50	11,068.3	1,408.3	-7.7	431,888.65	774,586.84	32° 11' 6.332 N	103° 34' 45.761 W
12,373.0	89.80	0.50	11,068.2	1,503.3	-6.8	431,983.64	774,587.67	32° 11' 7.272 N	103° 34' 45.744 W
12,467.0	90.30	359.40	11,068.1	1,597.3	-6.9	432,077.64	774,587.59	32° 11' 8.202 N	103° 34' 45.737 W
12,562.0	90.50	359.20	11,067.4	1,692.3	-8.1	432,172.63	774,586.43	32° 11' 9.142 N	103° 34' 45.743 W
12,657.0	90.70	359.90	11,066.4	1,787.3	-8.8	432,267.62	774,585.68	32° 11' 10.082 N	103° 34' 45.744 W
12,751.0	90.90	359.80	11,065.1	1,881.3	-9.1	432,361.61	774,585.43	32° 11' 11.012 N	103° 34' 45.739 W
12,846.0	89.90	359.10	11,064.5	1,976.3	-10.0	432,456.61	774,584.52	32° 11' 11.952 N	103° 34' 45.742 W
12,939.0	90.00	359.20	11,064.6	2,069.3	-11.4	432,549.60	774,583.14	32° 11' 12.873 N	103° 34' 45.750 W
13,034.0	90.00	359.50	11,064.6	2,164.3	-12.4	432,644.59	774,582.06	32° 11' 13.813 N	103° 34' 45.755 W
13,129.0	89.90	359.70	11,064.6	2,259.3	-13.1	432,739.59	774,581.40	32° 11' 14.753 N	103° 34' 45.755 W
13,223.0	89.70	358.90	11,065.0	2,353.3	-14.2	432,833.58	774,580.25	32° 11' 15.683 N	103° 34' 45.761 W
13,318.0	90.00	359.20	11,065.2	2,448.3	-15.8	432,928.56	774,578.68	32° 11' 16.623 N	103° 34' 45.771 W
13,413.0	90.00	358.80	11,065.2	2,543.3	-17.5	433,023.55	774,577.02	32° 11' 17.563 N	103° 34' 45.783 W
13,508.0	89.90	358.90	11,065.3	2,638.2	-19.4	433,118.53	774,575.11	32° 11' 18.503 N	103° 34' 45.797 W
13,602.0	89.50	358.00	11,065.8	2,732.2	-21.9	433,212.49	774,572.57	32° 11' 19.433 N	103° 34' 45.819 W
13,697.0	90.40	359.10	11,065.9	2,827.2	-24.3	433,307.46	774,570.17	32° 11' 20.373 N	103° 34' 45.839 W
13,792.0	90.50	359.20	11,065.1	2,922.1	-25.7	433,402.45	774,568.76	32° 11' 21.313 N	103° 34' 45.848 W
13,886.0	90.20	358.50	11,064.6	3,016.1	-27.6	433,496.43	774,566.87	32° 11' 22.243 N	103° 34' 45.862 W
13,982.0	91.40	0.00	11,063.2	3,112.1	-28.9	433,592.40	774,565.61	32° 11' 23.193 N	103° 34' 45.869 W
14,076.0	91.70	359.90	11,060.7	3,206.1	-29.0	433,686.37	774,565.53	32° 11' 24.123 N	103° 34' 45.862 W
14,171.0	91.10	0.30	11,058.3	3,301.0	-28.8	433,781.34	774,565.70	32° 11' 25.062 N	103° 34' 45.853 W

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Well:	#6H	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
14,266.0	89.50	1.10	11,057.9	3,396.0	-27.6	433,876.33	774,566.86	32° 11' 26.002 N	103° 34' 45.831 W
14,360.0	89.30	0.70	11,058.8	3,490.0	-26.2	433,970.31	774,568.33	32° 11' 26.932 N	103° 34' 45.807 W
14,455.0	89.40	1.50	11,059.9	3,585.0	-24.3	434,065.29	774,570.16	32° 11' 27.872 N	103° 34' 45.778 W
14,549.0	89.80	1.20	11,060.6	3,679.0	-22.1	434,159.26	774,572.37	32° 11' 28.801 N	103° 34' 45.744 W
14,644.0	89.90	1.20	11,060.8	3,773.9	-20.1	434,254.24	774,574.36	32° 11' 29.741 N	103° 34' 45.713 W
14,739.0	90.00	1.50	11,060.9	3,868.9	-17.9	434,349.21	774,576.60	32° 11' 30.681 N	103° 34' 45.679 W
14,834.0	88.30	0.00	11,062.3	3,963.9	-16.7	434,444.19	774,577.84	32° 11' 31.620 N	103° 34' 45.657 W
14,929.0	89.90	358.70	11,063.8	4,058.9	-17.7	434,539.16	774,576.77	32° 11' 32.560 N	103° 34' 45.662 W
15,022.0	90.10	359.00	11,063.8	4,151.8	-19.6	434,632.14	774,574.90	32° 11' 33.481 N	103° 34' 45.676 W
15,117.0	90.20	358.50	11,063.6	4,246.8	-21.7	434,727.12	774,572.83	32° 11' 34.421 N	103° 34' 45.693 W
15,212.0	89.70	359.00	11,063.6	4,341.8	-23.7	434,822.10	774,570.76	32° 11' 35.361 N	103° 34' 45.709 W
15,306.0	91.20	358.00	11,062.9	4,435.8	-26.2	434,916.06	774,568.29	32° 11' 36.290 N	103° 34' 45.730 W
15,401.0	91.10	358.30	11,061.0	4,530.7	-29.3	435,010.99	774,565.23	32° 11' 37.230 N	103° 34' 45.758 W
15,497.0	91.10	358.30	11,059.1	4,626.6	-32.1	435,106.93	774,562.38	32° 11' 38.180 N	103° 34' 45.783 W
15,591.0	91.10	357.70	11,057.3	4,720.6	-35.4	435,200.85	774,559.10	32° 11' 39.109 N	103° 34' 45.814 W
15,685.0	90.50	359.80	11,056.0	4,814.5	-37.4	435,294.82	774,557.05	32° 11' 40.039 N	103° 34' 45.830 W
15,780.0	90.30	359.70	11,055.4	4,909.5	-37.9	435,389.81	774,556.64	32° 11' 40.979 N	103° 34' 45.827 W
15,814.0	90.00	359.40	11,055.3	4,943.5	-38.1	435,423.81	774,556.37	32° 11' 41.316 N	103° 34' 45.827 W
Final MWD Survey: 15814.0' MD, 11055.3' TVD									
15,872.0	90.00	359.40	11,055.3	5,001.5	-38.7	435,481.81	774,555.76	32° 11' 41.890 N	103° 34' 45.830 W
BHL: 15872.0' MD, 11055.3' TVD, 90.00° INC, 359.40° AZ, 5001.5' +N/-S, -38.7' +E/-W, 5001.7' VS - PBHL(CSU#6H)									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,592.0	10,591.6	-12.8	-0.6	KOP: 10592.0' MD, 10591.6' TVD
11,246.0	11,060.1	377.4	-7.9	Cross 330' Hardline: 11246.0' MD, 11060.1' TVD, 77.26° INC
11,425.0	11,071.8	555.5	-5.3	EOC: 11425.0' MD, 11071.8' TVD, 90.30° INC, 0.70° AZ, 555.5' VS
15,814.0	11,055.3	4,943.5	-38.1	Final MWD Survey: 15814.0' MD, 11055.3' TVD
15,872.0	11,055.3	5,001.5	-38.7	BHL: 15872.0' MD, 11055.3' TVD, 90.00° INC, 359.40° AZ, 5001.5' +N/-S, -38.7

Checked By: _____

Approved By: _____

Date: _____

HOBBSOCD

MAR 09 2015

RECEIVED

Yates Petroleum

Lea County, NM (NAD-83)

Caravan State Unit

#6H

OH

OH

Anticollision Report

12 December, 2014

Anticollision Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Reference Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Houston R5000 Database
Reference Design:	OH	Offset TVD Reference:	Offset Datum

Reference	OH		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum separation factor of 20.00	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Program	Date 12/12/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	1,200.0	Survey #1 -Gyro (OH)	CB-GYRO-MS	Camera based gyro multishot
1,249.0	15,872.0	Survey #2 - Crescent MWD Surveys (OH)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Caravan State Unit						
#9H - OH - OH	293.2	296.3	23.2	18.8	5.298	CC
#9H - OH - OH	1,249.0	1,251.7	27.2	6.3	1.303	Level 3, ES, SF

Offset Design													Offset Site Error: 0.0 usft
Caravan State Unit - #9H - OH - OH													Offset Well Error: 0.0 usft
Survey Program: 100-CB-GYRO-MS, 1337-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
200.0	200.0	203.1	203.1	1.5	1.3	-81.72	12.3	-19.9	23.4	20.6	2.80	8.340	
293.2	293.2	296.3	296.3	2.3	2.1	-121.41	12.2	-19.6	23.2	18.8	4.37	5.298	CC
300.0	300.0	303.1	303.1	2.3	2.2	-124.14	12.2	-19.6	23.2	18.7	4.49	5.162	
400.0	400.0	402.9	402.9	3.2	3.1	-127.56	12.2	-19.5	23.4	17.2	6.29	3.728	
500.0	500.0	503.1	503.1	4.2	3.9	-128.31	12.2	-19.5	23.6	15.5	8.08	2.919	
535.5	535.5	538.6	538.6	4.5	4.2	-129.70	12.2	-19.4	23.6	14.9	8.70	2.709	
600.0	600.0	603.0	603.0	5.0	4.8	-132.48	12.0	-19.4	23.7	13.8	9.81	2.411	
700.0	700.0	703.1	703.0	5.9	5.7	-133.29	11.9	-19.3	23.9	12.3	11.59	2.064	
800.0	800.0	802.9	802.9	6.8	6.6	-104.07	12.3	-19.2	24.3	10.9	13.37	1.816	
900.0	900.0	902.9	902.9	7.7	7.4	-93.80	12.7	-19.3	24.7	9.5	15.15	1.628	
1,000.0	1,000.0	1,002.9	1,002.9	8.6	8.3	-153.84	12.9	-19.6	25.3	8.3	16.94	1.491	Level 3
1,100.0	1,100.0	1,102.9	1,102.9	9.5	9.2	-151.68	12.8	-20.1	26.0	7.3	18.69	1.392	Level 3
1,200.0	1,200.0	1,202.8	1,202.7	10.4	10.1	-111.54	12.7	-20.8	26.8	6.4	20.44	1.313	Level 3
1,249.0	1,249.0	1,251.7	1,251.7	10.6	10.3	-19.47	12.7	-21.2	27.2	6.3	20.88	1.303	Level 3, ES, SF
1,438.0	1,438.0	1,440.7	1,440.7	10.6	10.7	2.35	12.8	-23.4	28.6	7.4	21.28	1.346	Level 3
1,627.0	1,627.0	1,629.8	1,629.8	10.6	10.7	-7.67	12.4	-25.3	29.6	8.3	21.32	1.389	Level 3
1,817.0	1,817.0	1,819.4	1,819.3	10.7	10.7	21.75	11.7	-27.5	30.3	8.9	21.40	1.416	Level 3
2,007.0	2,007.0	2,008.3	2,008.1	10.7	10.8	20.03	12.5	-34.4	35.3	13.8	21.50	1.643	
2,196.0	2,196.0	2,197.3	2,196.8	10.8	10.9	144.79	13.1	-44.0	44.8	23.2	21.64	2.071	
2,387.0	2,386.9	2,388.2	2,387.6	10.9	11.0	146.43	12.9	-52.8	55.3	33.5	21.80	2.537	
2,576.0	2,575.9	2,577.3	2,576.4	11.0	11.1	111.97	12.0	-60.9	64.3	42.3	22.00	2.921	
2,766.0	2,765.9	2,766.9	2,765.9	11.1	11.2	112.08	10.5	-68.6	72.3	50.0	22.22	3.252	
2,955.0	2,954.9	2,955.8	2,954.6	11.2	11.3	146.02	8.9	-77.1	80.9	58.5	22.47	3.603	
3,145.0	3,144.9	3,145.8	3,144.4	11.3	11.4	106.84	6.4	-85.0	88.8	66.1	22.74	3.907	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Reference Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Houston R5000 Database
Reference Design:	OH	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:
Caravan State Unit - #9H - OH - OH														0.0 usft
Survey Program: 100-CB-GYRO-MS, 1337-MWD														Offset Well Error: 0.0 usft
Reference	Offset	Semi Major Axis		Distance										Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,335.0	3,334.9	3,336.5	3,335.0	11.5	11.6	-127.42	5.1	-92.0	96.3	73.3	23.02	4.183		
3,524.0	3,523.9	3,523.4	3,521.7	11.6	11.8	132.68	7.1	-99.2	104.3	81.0	23.33	4.471		
3,713.0	3,712.9	3,713.3	3,711.4	11.8	11.9	-170.97	11.7	-107.3	113.7	90.0	23.67	4.802		
3,903.0	3,902.9	3,902.8	3,900.8	12.0	12.1	-43.86	15.0	-113.9	120.9	96.8	24.03	5.030		
4,092.0	4,091.9	4,090.1	4,087.8	12.2	12.3	-60.32	19.3	-123.2	130.5	106.1	24.41	5.346		
4,282.0	4,281.9	4,281.6	4,279.1	12.4	12.6	-164.15	23.2	-131.6	139.4	114.6	24.81	5.619		
4,471.0	4,470.9	4,471.2	4,468.6	12.6	12.8	147.95	25.9	-138.2	147.1	121.9	25.23	5.830		
4,661.0	4,660.9	4,658.8	4,656.0	12.8	13.0	146.50	29.1	-146.7	157.4	131.8	25.67	6.134		
4,850.0	4,849.9	4,851.2	4,848.2	13.0	13.3	152.04	30.7	-153.7	166.8	140.7	26.12	6.385		
5,040.0	5,039.9	5,042.4	5,039.4	13.3	13.5	-19.88	31.6	-158.2	171.5	144.9	26.60	6.447		
5,156.0	5,155.9	5,158.8	5,155.7	13.4	13.7	-24.10	32.3	-160.3	172.4	145.5	26.90	6.410		
5,318.0	5,317.9	5,321.3	5,318.1	13.6	13.9	-18.36	32.9	-163.0	174.0	146.6	27.33	6.366		
5,507.0	5,506.9	5,510.5	5,507.4	13.9	14.1	-26.63	33.5	-165.8	175.7	147.9	27.84	6.312		
5,697.0	5,696.8	5,702.2	5,699.1	14.1	14.4	-32.24	33.7	-167.5	176.1	147.7	28.36	6.209		
5,887.0	5,886.8	5,892.7	5,889.5	14.4	14.7	-25.32	33.8	-168.0	175.1	146.2	28.89	6.061		
6,076.0	6,075.8	6,081.5	6,078.4	14.7	14.9	-32.85	33.6	-168.5	174.2	144.8	29.44	5.918		
6,265.0	6,264.8	6,270.2	6,267.0	15.0	15.2	-17.17	33.3	-169.3	173.8	143.8	29.98	5.795		
6,454.0	6,453.8	6,459.4	6,456.3	15.2	15.5	-21.85	33.1	-170.0	173.0	142.5	30.54	5.666		
6,644.0	6,643.8	6,649.1	6,645.9	15.5	15.8	-20.07	33.0	-170.9	172.0	140.9	31.11	5.529		
6,701.7	6,701.5	6,706.8	6,703.7	15.6	15.9	-45.85	33.1	-171.1	171.8	140.5	31.29	5.492		
6,833.0	6,832.8	6,838.1	6,835.0	15.8	16.0	-145.54	33.4	-171.7	172.8	141.1	31.68	5.454		
7,022.0	7,021.8	7,026.9	7,023.7	16.1	16.3	-149.48	34.2	-172.6	175.4	143.1	32.27	5.434		
7,211.0	7,210.8	7,215.9	7,212.7	16.4	16.6	-178.66	34.9	-173.7	177.8	144.9	32.87	5.410		
7,399.0	7,398.8	7,404.6	7,401.5	16.7	16.9	148.24	34.4	-174.7	179.9	146.4	33.48	5.372		
7,589.0	7,588.8	7,596.1	7,592.9	17.0	17.2	142.29	31.9	-174.6	180.3	146.2	34.11	5.285		
7,777.0	7,776.8	7,784.4	7,781.2	17.3	17.5	60.53	30.7	-173.5	178.9	144.2	34.73	5.151		
7,966.0	7,965.8	7,974.1	7,970.9	17.7	17.9	71.98	29.9	-171.7	176.3	141.0	35.36	4.986		
8,155.0	8,154.8	8,163.1	8,159.8	18.0	18.2	94.79	29.2	-169.6	173.9	137.9	35.99	4.831		
8,345.0	8,344.8	8,352.8	8,349.6	18.3	18.5	103.03	28.5	-167.6	172.0	135.4	36.63	4.696		
8,534.0	8,533.8	8,541.9	8,538.7	18.6	18.8	96.94	27.4	-165.5	170.0	132.7	37.28	4.560		
8,696.1	8,695.9	8,702.0	8,698.8	18.9	19.1	89.73	27.3	-164.6	169.2	131.3	37.83	4.472		
8,723.0	8,722.8	8,728.8	8,725.6	18.9	19.1	88.58	27.5	-164.6	169.2	131.3	37.93	4.461		
8,913.0	8,912.7	8,918.4	8,915.2	19.3	19.4	72.97	28.3	-164.8	169.4	130.8	38.58	4.390		
9,101.0	9,100.7	9,105.4	9,102.1	19.6	19.8	-91.50	29.9	-165.9	170.6	131.4	39.23	4.349		
9,290.0	9,289.7	9,296.5	9,293.3	19.9	20.1	-29.39	29.9	-165.9	169.0	129.1	39.90	4.236		
9,395.3	9,395.0	9,400.3	9,397.1	20.1	20.3	-8.12	30.4	-165.9	168.0	127.7	40.28	4.171		
9,479.0	9,478.7	9,482.8	9,479.5	20.3	20.4	119.58	31.2	-166.5	168.7	128.1	40.57	4.158		
9,661.0	9,660.7	9,666.7	9,663.4	20.6	20.7	-82.34	33.5	-168.2	171.1	129.9	41.22	4.151		
9,756.0	9,755.7	9,762.8	9,759.5	20.8	20.9	-120.45	34.1	-167.8	171.4	129.8	41.56	4.124		
9,850.0	9,849.7	9,855.6	9,852.3	20.9	21.1	163.26	34.1	-167.7	172.2	130.3	41.89	4.111		
9,943.0	9,942.7	9,947.5	9,944.2	21.1	21.2	-142.67	33.6	-168.3	173.5	131.2	42.23	4.108		
10,038.0	10,037.7	10,042.4	10,039.1	21.3	21.4	119.29	32.9	-169.4	175.1	132.5	42.57	4.113		
10,133.0	10,132.7	10,137.6	10,134.3	21.5	21.6	98.46	32.5	-170.3	176.5	133.6	42.92	4.112		
10,228.0	10,227.7	10,232.8	10,229.5	21.6	21.8	98.05	32.3	-171.1	177.4	134.2	43.27	4.101		
10,323.0	10,322.6	10,327.9	10,324.6	21.8	21.9	111.86	31.9	-171.7	178.4	134.7	43.62	4.089		
10,418.0	10,417.6	10,421.6	10,418.3	22.0	22.1	106.51	31.6	-172.7	179.7	135.8	43.96	4.089		
10,513.0	10,512.6	10,515.8	10,512.4	22.2	22.3	29.07	30.8	-174.5	180.8	136.5	44.31	4.081		
10,592.0	10,591.6	10,595.6	10,592.2	22.3	22.4	-44.95	28.9	-176.2	180.5	135.9	44.60	4.047		
10,637.0	10,636.4	10,647.4	10,643.8	22.4	22.5	-72.65	24.2	-176.8	178.6	133.8	44.76	3.990		
10,685.0	10,683.4	10,695.6	10,691.0	22.5	22.6	-82.99	14.4	-176.7	175.2	130.2	44.95	3.898		
10,719.4	10,716.4	10,724.9	10,719.1	22.5	22.7	-89.69	6.1	-176.6	174.1	129.0	45.07	3.862		
10,732.0	10,728.3	10,735.3	10,728.8	22.6	22.7	-92.12	2.8	-176.5	174.3	129.1	45.11	3.863		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Reference Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Houston R5000 Database
Reference Design:	OH	Offset TVD Reference:	Offset Datum

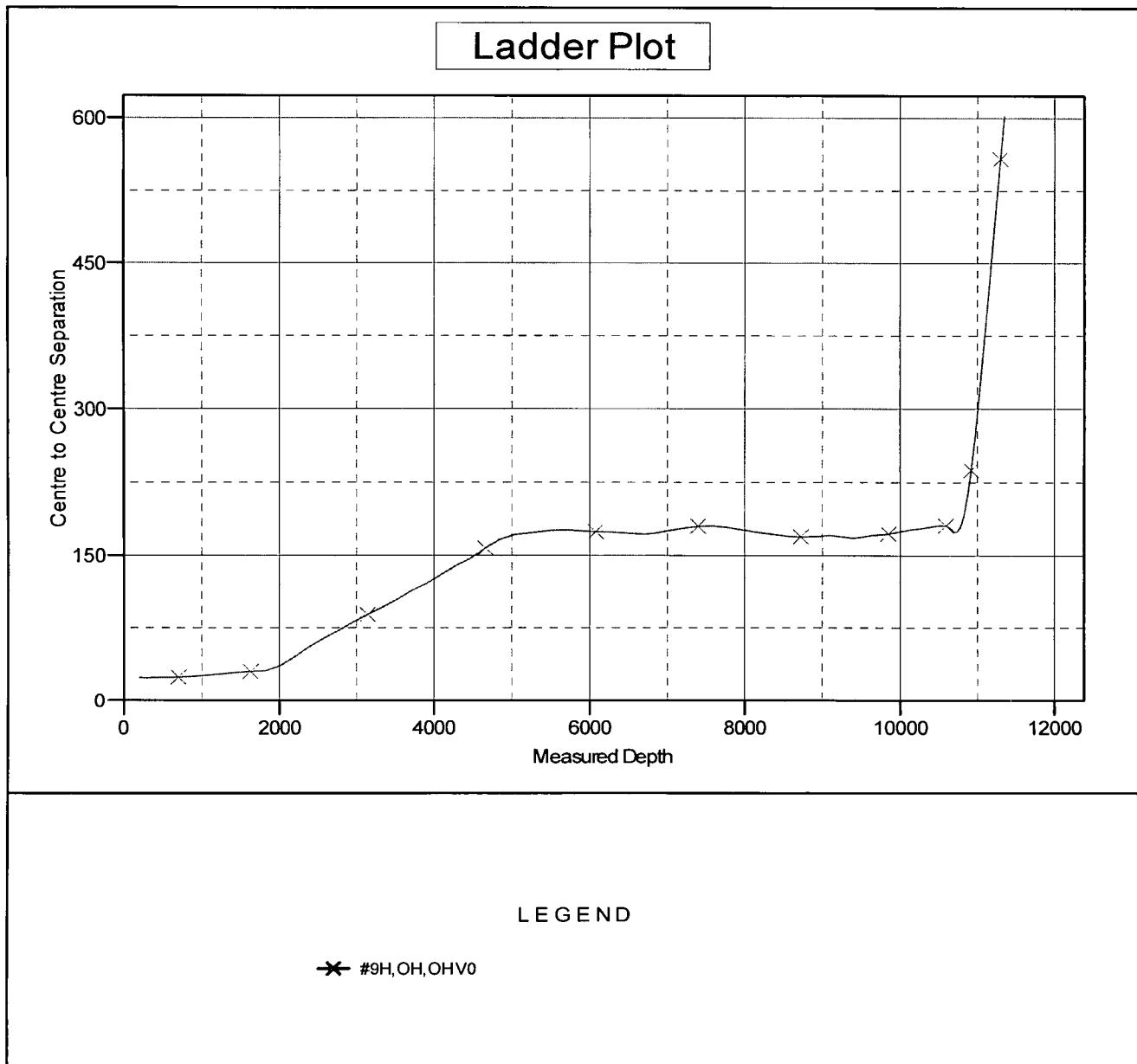
Offset Design														Offset Site Error: 0.0 usft	
Caravan State Unit - #9H - OH - OH														Offset Well Error: 0.0 usft	
Survey Program: 100-CB-GYRO-MS, 1337-MWD															
Reference	Offset	Semi Major Axis		Distance		Warning									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
10,779.0	10,772.0	10,769.5	10,760.7	22.6	22.8	-100.98	-9.6	-176.0	178.7	133.6	45.14	3.959			
10,826.0	10,814.1	10,796.1	10,784.9	22.7	22.8	-107.54	-20.7	-175.5	190.9	145.9	45.00	4.241			
10,874.0	10,855.0	10,816.8	10,803.3	22.8	22.8	-108.66	-30.1	-175.1	211.3	166.4	44.94	4.702			
10,921.0	10,892.5	10,831.7	10,816.3	22.9	22.9	-107.03	-37.4	-174.9	237.8	192.8	45.02	5.282			
10,968.0	10,927.2	10,842.0	10,825.2	23.1	22.9	-104.23	-42.5	-174.8	269.6	224.3	45.24	5.959			
11,015.0	10,958.8	10,848.3	10,830.7	23.2	22.9	-100.13	-45.8	-174.7	305.5	259.9	45.61	6.698			
11,063.0	10,987.8	10,851.6	10,833.4	23.3	22.9	-95.12	-47.5	-174.7	345.5	299.4	46.02	7.507			
11,110.0	11,012.7	10,851.8	10,833.6	23.5	22.9	-84.59	-47.6	-174.7	386.8	340.8	46.22	8.370			
11,157.0	11,033.2	10,849.0	10,831.2	23.7	22.9	-70.67	-46.1	-174.7	429.3	384.4	44.92	9.557			
11,205.0	11,049.5	10,843.6	10,826.6	23.9	22.9	-57.31	-43.4	-174.7	473.2	431.3	41.89	11.296			
11,252.0	11,061.4	10,836.4	10,820.4	24.2	22.9	-46.68	-39.7	-174.8	516.1	477.8	38.30	13.472			
11,299.0	11,069.1	10,824.0	10,809.6	24.5	22.9	-37.66	-33.6	-175.0	558.3	523.7	34.62	16.128			
11,330.0	11,071.5	10,824.0	10,809.6	24.7	22.9	-33.38	-33.6	-175.0	585.4	552.7	32.76	17.873			
11,349.0	11,071.9	10,824.0	10,809.6	24.8	22.9	-32.03	-33.6	-175.0	601.8	569.5	32.22	18.676			

Anticollision Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Reference Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH	Database:	Houston R5000 Database
Reference Design:	OH	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB @ 3505.0usft (Cactus 124 - KB=
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #6H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.40°



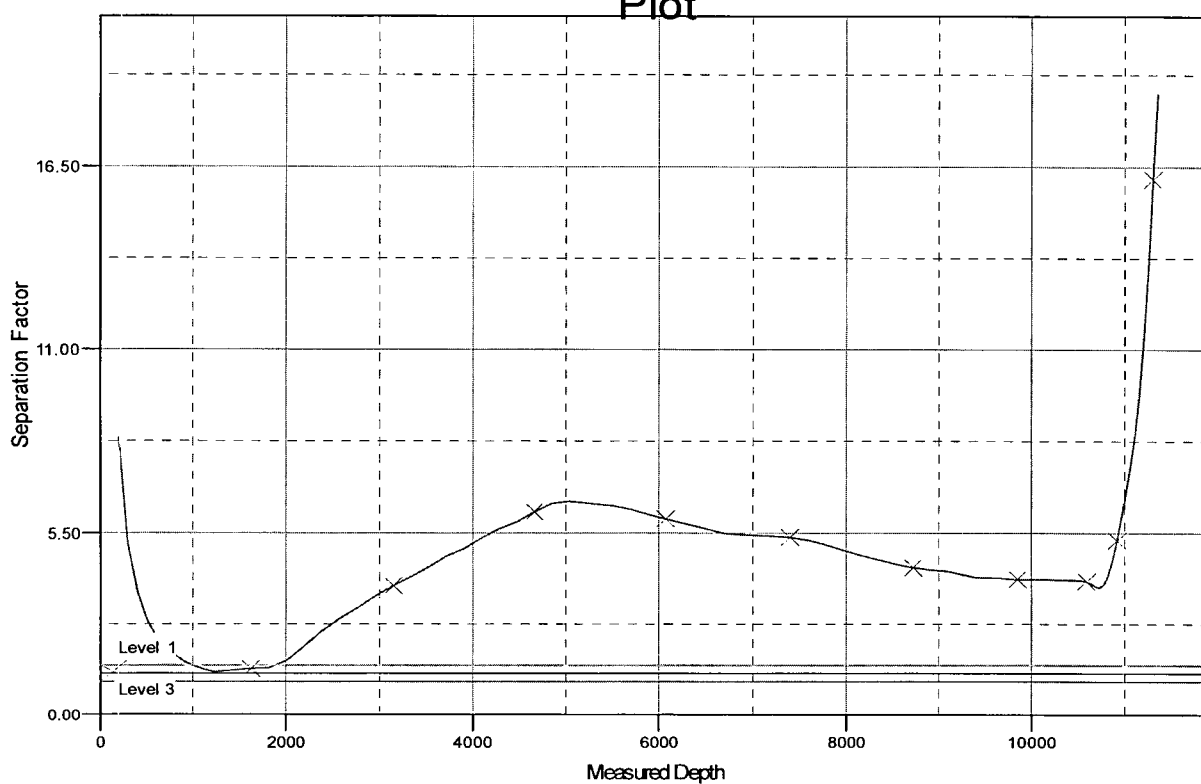
Anticollision Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #6H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Reference Site:	Caravan State Unit	MD Reference:	RKB @ 3505.0usft (Cactus 124 - KB=25')
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH	Database:	Houston R5000 Database
Reference Design:	OH	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB @ 3505.0usft (Cactus 124 - KB=
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #6H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.40°

Separation Factor Plot



LEGEND

✕ #9H,OH,OHV0



Job Number: SVMO-141606
 Company: Yates Petroleum Corporation
 Lease/Well: Caravan State Unit 6H
 Location: Lea County, NM
 Rig Name: Cactus #124
 RKB: 25'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 6.78°
 Grid: East To Grid North
 File name: S:\2014SU-1\YATES\MO\CARAVA-116H.SVY
 Date/Time: 02-Dec-14 / 09:42
 Curve Name: Surface - 1200' M.D. (Rate Gyro)

HOBBS OGD

MAR 09 2015

RECEIVED

MS SURVEY

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 359.60
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
 Surface MD to 1200' MD is, to the best of
 our knowledge a true and accurate account of the
 well bore.
Daniel West 12/2/14
 MS Energy Services Date

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg.	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.16	40.17	100.00	.11	.09	.11	.14	40.17	.16
200.00	.34	22.06	200.00	.49	.29	.49	.57	30.84	.19
300.00	.33	63.22	300.00	.89	.66	.89	1.11	36.47	.24
400.00	.24	65.79	400.00	1.11	1.11	1.10	1.57	44.99	.09
500.00	.18	65.94	500.00	1.26	1.44	1.25	1.91	48.90	.06
600.00	.19	69.18	599.99	1.38	1.74	1.37	2.22	51.57	.01
700.00	.43	68.98	699.99	1.58	2.25	1.56	2.74	54.96	.24
800.00	.42	39.19	799.99	1.99	2.83	1.97	3.46	54.82	.22
900.00	.24	28.39	899.99	2.46	3.16	2.44	4.01	52.07	.19

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
1000.00	.25	87.70	999.99	2.66	3.48	2.63	4.37	52.63	.24
1100.00	.25	84.52	1099.99	2.68	3.91	2.66	4.74	55.54	.01
Last Survey Depth Recorded									
1200.00	.09	43.28	1199.99	2.76	4.18	2.73	5.01	56.56	.19