



Yates Petroleum
Project: Lea County, NM (NAD-83)
Site: Berry APN State
Well: #5H
Wellbore: OH
Plan: Plan #3 (#5H/OH)

WELL DETAILS: #5H

Ground Elevation:: 3718.0
RKB Elevation: RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Rig Name: McVay #4 - KB = 18.5'

Surface Hole Location
Northing: 549532.20 Easting: 800020.20 Latitude: 32° 30' 28.533 N Longitude: 103° 29' 39.101 W

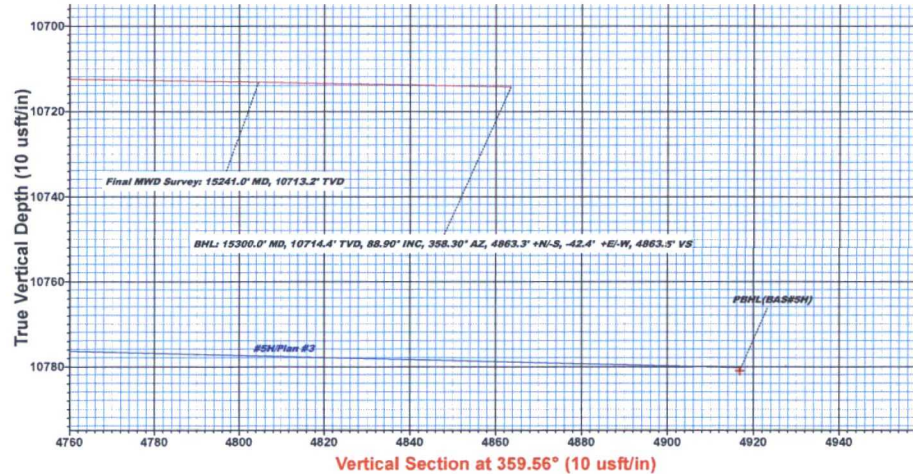
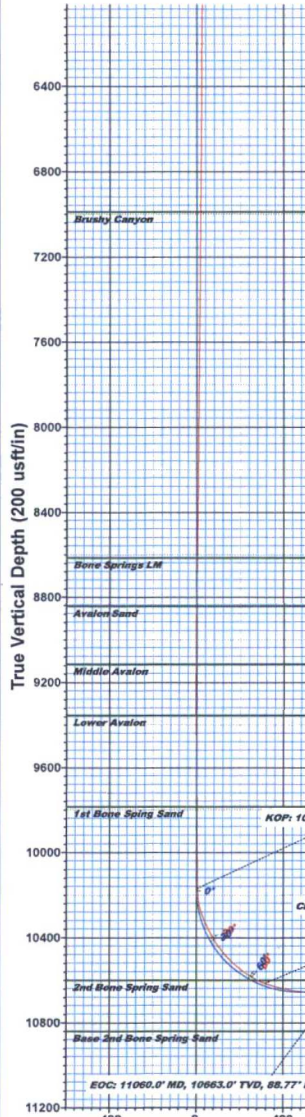
Section Details

	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	10179.9	0.00	0.00	10179.9	0.0	0.0	0.00	0.00	0.0
3	10920.3	88.85	359.56	10657.3	467.9	-3.6	12.00	359.56	467.9
4	11452.5	88.85	359.56	10668.0	1000.0	-7.7	0.00	0.00	1000.0
5	11475.0	88.40	359.56	10668.5	1022.5	-7.9	2.00	180.00	1022.5
6	12452.9	88.40	359.56	10695.8	1999.9	-15.4	0.00	0.00	2000.0
7	12464.9	88.16	359.56	10696.2	2011.9	-15.5	2.00	180.00	2012.0
8	13453.4	88.16	359.56	10727.9	2999.9	-23.0	0.00	0.00	3000.0
9	13459.4	88.28	359.56	10728.1	3005.9	-23.1	2.00	0.00	3006.0
10	14453.9	88.28	359.56	10757.9	3999.9	-30.7	0.00	0.00	4000.0
11	14469.9	88.60	359.56	10758.4	4015.9	-30.8	2.00	0.00	4016.0
12	15370.9	88.60	359.56	10780.4	4916.6	-37.8	0.00	0.00	4916.7

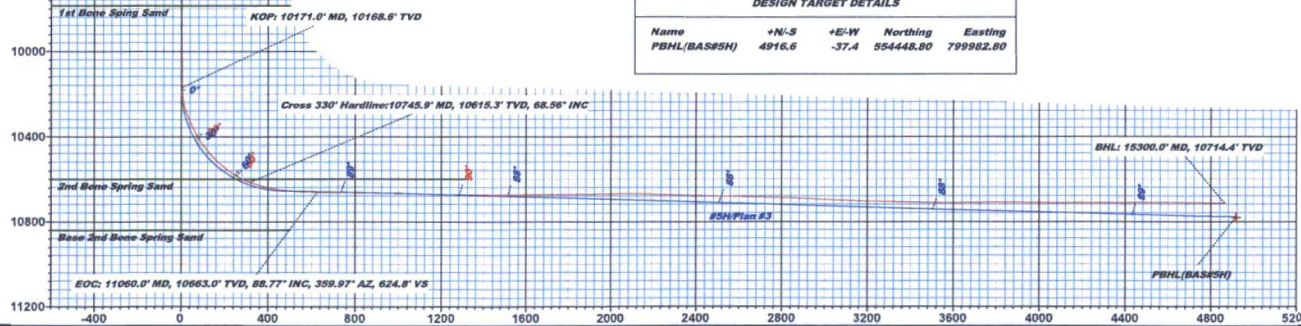


Azimuths to Grid North
True North: -0.45°
Magnetic North: 6.69°

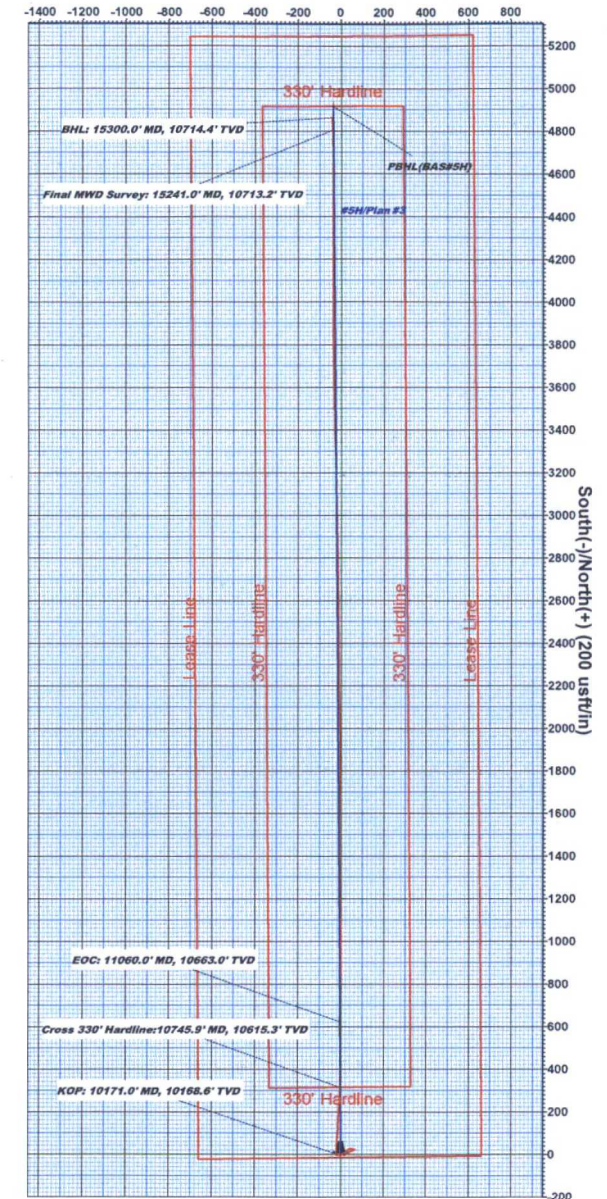
Magnetic Field
Strength: 48442.4snT
Dip Angle: 60.37°
Date: 12/15/2014
Model: IGRF2010



DESIGN TARGET DETAILS				
Name	+N/-S	+E/-W	Northing	Easting
PBL(BAS5H)	4916.6	-37.4	554448.80	799982.80



West(-)/East(+) (200 usft/in)



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 #3 (#5H/OH)
Created By: Adrian Castro Date: 9:19, February 09 2015



HOBBS OCD

AUG 15 2017

RECEIVED

Yates Petroleum

Lea County, NM (NAD-83)

Berry APN State

#5H

OH

Design: OH

Standard Survey Report

09 February, 2015



Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Site:	Berry APN State	MD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Well:	#5H	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		Berry APN State			
Site Position:		Northing:	549,391.86 usft	Latitude:	32° 30' 27.041 N
From:	Map	Easting:	801,342.02 usft	Longitude:	103° 29' 23.679 W
Position Uncertainty:	2.0 usft	Slot Radius:	8-3/4 "	Grid Convergence:	0.45 °

Well	#5H					
Well Position	+N/-S	0.0 usft	Northing:	549,532.20 usft	Latitude:	32° 30' 28.533 N
	+E/-W	0.0 usft	Easting:	800,020.20 usft	Longitude:	103° 29' 39.101 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,718.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/15/2014	7.14	60.37	48,442

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	359.56	

Survey Program	Date	2/9/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	1,700.0	Survey #1 - Gyros (OH)	CB-GYRO-MS	Camera based gyro multishot	
1,891.0	15,241.0	Survey #2 - Crescent MWD Survey (OH)	MWD	MWD - Standard	
15,300.0	15,300.0	Survey #3 - PTB (OH)	BLIND	Blind drilling, where no tool is applied	

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.21	34.10	100.0	0.2	0.1	0.2	0.21	0.21	0.00	
200.0	0.29	6.89	200.0	0.6	0.2	0.6	0.14	0.08	-27.21	
300.0	0.44	13.77	300.0	1.2	0.4	1.2	0.16	0.15	6.88	
400.0	0.53	21.15	400.0	2.0	0.6	2.0	0.11	0.09	7.38	
500.0	0.37	33.62	500.0	2.7	1.0	2.7	0.19	-0.16	12.47	
600.0	0.26	60.09	600.0	3.1	1.3	3.1	0.18	-0.11	26.47	
700.0	0.20	216.76	700.0	3.0	1.4	3.0	0.45	-0.06	156.67	
800.0	0.39	283.65	800.0	3.0	1.0	3.0	0.36	0.19	66.89	



Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Site:	Berry APN State	MD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Well:	#5H	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	0.11	288.90	900.0	3.1	0.6	3.1	0.28	-0.28	5.25	
1,000.0	0.23	222.29	1,000.0	3.0	0.3	3.0	0.21	0.12	-66.61	
1,100.0	0.51	221.97	1,100.0	2.5	-0.1	2.5	0.28	0.28	-0.32	
1,200.0	0.31	252.41	1,200.0	2.1	-0.6	2.1	0.29	-0.20	30.44	
1,300.0	0.20	242.25	1,300.0	1.9	-1.1	1.9	0.12	-0.11	-10.16	
1,400.0	0.20	228.96	1,400.0	1.7	-1.3	1.7	0.05	0.00	-13.29	
1,500.0	0.66	241.96	1,500.0	1.3	-2.0	1.4	0.47	0.46	13.00	
1,600.0	0.58	232.41	1,600.0	0.8	-2.9	0.8	0.13	-0.08	-9.55	
1,700.0	0.64	267.02	1,700.0	0.4	-3.8	0.4	0.37	0.06	34.61	
1,891.0	0.20	203.50	1,891.0	0.1	-5.0	0.1	0.30	-0.23	-33.26	
1,985.0	0.10	139.00	1,985.0	-0.2	-5.1	-0.1	0.19	-0.11	-68.62	
2,080.0	0.30	126.60	2,080.0	-0.4	-4.8	-0.3	0.21	0.21	-13.05	
2,175.0	0.00	130.50	2,175.0	-0.5	-4.6	-0.5	0.32	-0.32	0.00	
2,270.0	0.10	37.90	2,270.0	-0.4	-4.6	-0.4	0.11	0.11	0.00	
2,365.0	0.20	55.00	2,365.0	-0.3	-4.4	-0.3	0.11	0.11	18.00	
2,460.0	0.30	58.80	2,460.0	-0.1	-4.0	0.0	0.11	0.11	4.00	
2,555.0	0.40	65.00	2,555.0	0.2	-3.5	0.2	0.11	0.11	6.53	
2,650.0	0.30	69.00	2,650.0	0.4	-3.0	0.5	0.11	-0.11	4.21	
2,744.0	0.40	63.60	2,744.0	0.7	-2.4	0.7	0.11	0.11	-5.74	
2,839.0	0.60	64.80	2,838.9	1.0	-1.7	1.0	0.21	0.21	1.26	
2,934.0	1.00	64.30	2,933.9	1.6	-0.5	1.6	0.42	0.42	-0.53	
3,029.0	1.40	67.60	3,028.9	2.4	1.3	2.4	0.43	0.42	3.47	
3,124.0	1.70	72.60	3,123.9	3.3	3.7	3.2	0.35	0.32	5.26	
3,219.0	2.20	71.70	3,218.8	4.3	6.8	4.2	0.53	0.53	-0.95	
3,314.0	2.70	72.00	3,313.7	5.5	10.7	5.4	0.53	0.53	0.32	
3,409.0	1.90	71.30	3,408.7	6.7	14.3	6.6	0.84	-0.84	-0.74	
3,504.0	1.70	69.60	3,503.6	7.7	17.1	7.6	0.22	-0.21	-1.79	
3,598.0	1.90	71.20	3,597.6	8.7	19.9	8.6	0.22	0.21	1.70	
3,694.0	2.20	71.30	3,693.5	9.8	23.1	9.6	0.31	0.31	0.10	
3,788.0	1.30	62.80	3,787.5	10.9	25.8	10.7	0.99	-0.96	-9.04	
3,800.0	1.00	46.19	3,799.5	11.0	26.0	10.8	3.71	-2.50	-138.42	
3,900.0	0.90	38.01	3,899.4	12.2	27.1	12.0	0.17	-0.10	-8.18	
4,000.0	1.22	46.80	3,999.4	13.6	28.4	13.4	0.36	0.32	8.79	
4,100.0	0.96	47.06	4,099.4	14.9	29.8	14.7	0.26	-0.26	0.26	
4,200.0	1.31	39.61	4,199.4	16.3	31.1	16.1	0.38	0.35	-7.45	
4,300.0	1.37	26.05	4,299.4	18.3	32.3	18.0	0.32	0.06	-13.56	
4,400.0	1.01	16.93	4,399.3	20.2	33.1	19.9	0.41	-0.36	-9.12	
4,500.0	0.66	24.27	4,499.3	21.6	33.6	21.3	0.37	-0.35	7.34	
4,600.0	1.22	34.65	4,599.3	23.0	34.5	22.7	0.58	0.56	10.38	
4,700.0	1.19	47.58	4,699.3	24.5	35.8	24.3	0.27	-0.03	12.93	
4,800.0	1.19	65.55	4,799.3	25.7	37.5	25.4	0.37	0.00	17.97	
4,900.0	1.19	58.42	4,899.3	26.7	39.4	26.3	0.15	0.00	-7.13	
5,000.0	1.12	58.65	4,999.2	27.7	41.1	27.4	0.07	-0.07	0.23	



Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Site:	Berry APN State	MD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Well:	#5H	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)
5,100.0	0.94	89.05	5,099.2	28.2	42.8	27.9	0.57	-0.18	30.40
5,200.0	1.45	93.46	5,199.2	28.2	44.8	27.8	0.52	0.51	4.41
5,300.0	1.83	104.62	5,299.2	27.7	47.6	27.3	0.49	0.38	11.16
5,400.0	1.81	96.78	5,399.1	27.1	50.8	26.7	0.25	-0.02	-7.84
5,500.0	1.85	95.17	5,499.1	26.8	53.9	26.3	0.07	0.04	-1.61
5,600.0	1.43	96.59	5,599.0	26.5	56.8	26.0	0.42	-0.42	1.42
5,700.0	1.41	100.27	5,699.0	26.1	59.2	25.7	0.09	-0.02	3.68
5,800.0	1.20	99.58	5,799.0	25.7	61.5	25.2	0.21	-0.21	-0.69
5,891.0	1.10	118.40	5,889.9	25.1	63.2	24.7	0.43	-0.11	20.68
5,986.0	1.10	105.70	5,984.9	24.5	64.9	24.0	0.26	0.00	-13.37
6,081.0	0.70	238.80	6,079.9	23.9	65.2	23.4	1.75	-0.42	140.11
6,176.0	1.20	239.00	6,174.9	23.1	63.9	22.6	0.53	0.53	0.21
6,271.0	1.00	236.20	6,269.9	22.1	62.4	21.7	0.22	-0.21	-2.95
6,366.0	0.90	328.40	6,364.9	22.3	61.3	21.8	1.44	-0.11	97.05
6,461.0	1.20	232.50	6,459.9	22.3	60.1	21.9	1.65	0.32	-100.95
6,556.0	1.00	229.80	6,554.8	21.2	58.7	20.7	0.22	-0.21	-2.84
6,651.0	0.80	252.10	6,649.8	20.5	57.4	20.0	0.42	-0.21	23.47
6,746.0	1.10	244.00	6,744.8	19.8	56.0	19.4	0.35	0.32	-8.53
6,841.0	1.20	249.80	6,839.8	19.1	54.2	18.7	0.16	0.11	6.11
6,936.0	1.10	240.20	6,934.8	18.3	52.5	17.9	0.23	-0.11	-10.11
7,030.0	0.90	250.10	7,028.8	17.6	51.0	17.2	0.28	-0.21	10.53
7,125.0	1.10	257.00	7,123.8	17.2	49.4	16.8	0.25	0.21	7.26
7,220.0	1.00	243.90	7,218.7	16.6	47.8	16.2	0.27	-0.11	-13.79
7,315.0	1.10	249.30	7,313.7	15.9	46.2	15.5	0.15	0.11	5.68
7,410.0	1.20	231.30	7,408.7	14.9	44.5	14.6	0.39	0.11	-18.95
7,505.0	1.20	226.90	7,503.7	13.6	43.0	13.3	0.10	0.00	-4.63
7,600.0	1.20	223.10	7,598.7	12.2	41.6	11.9	0.08	0.00	-4.00
7,695.0	1.10	229.20	7,693.6	10.9	40.3	10.6	0.17	-0.11	6.42
7,790.0	2.40	260.00	7,788.6	10.0	37.6	9.7	1.64	1.37	32.42
7,885.0	2.40	267.50	7,883.5	9.5	33.7	9.3	0.33	0.00	7.89
7,980.0	2.20	263.20	7,978.4	9.2	29.9	9.0	0.28	-0.21	-4.53
8,075.0	2.10	257.40	8,073.4	8.6	26.4	8.4	0.25	-0.11	-6.11
8,169.0	2.20	257.40	8,167.3	7.9	22.9	7.7	0.11	0.11	0.00
8,265.0	1.90	248.90	8,263.2	6.9	19.6	6.8	0.44	-0.31	-8.85
8,359.0	1.80	251.90	8,357.2	5.9	16.8	5.8	0.15	-0.11	3.19
8,454.0	1.80	249.40	8,452.2	4.9	14.0	4.8	0.08	0.00	-2.63
8,549.0	1.80	246.30	8,547.1	3.8	11.2	3.7	0.10	0.00	-3.26
8,644.0	1.80	245.40	8,642.1	2.5	8.5	2.5	0.03	0.00	-0.95
8,739.0	1.70	241.10	8,737.0	1.2	5.9	1.2	0.17	-0.11	-4.53
8,834.0	2.00	231.80	8,832.0	-0.5	3.4	-0.5	0.45	0.32	-9.79
8,929.0	1.10	257.50	8,926.9	-1.7	1.2	-1.7	1.17	-0.95	27.05
9,024.0	1.00	246.50	9,021.9	-2.2	-0.5	-2.2	0.24	-0.11	-11.58
9,119.0	1.40	236.90	9,116.9	-3.2	-2.2	-3.2	0.47	0.42	-10.11



Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Site:	Berry APN State	MD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Well:	#5H	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)
9,214.0	1.60	234.30	9,211.9	-4.6	-4.3	-4.5	0.22	0.21	-2.74
9,309.0	1.30	326.90	9,306.8	-4.5	-5.9	-4.4	2.22	-0.32	97.47
9,404.0	1.50	329.70	9,401.8	-2.5	-7.1	-2.4	0.22	0.21	2.95
9,499.0	1.30	319.40	9,496.8	-0.6	-8.5	-0.5	0.34	-0.21	-10.84
9,594.0	1.30	290.50	9,591.8	0.6	-10.2	0.7	0.68	0.00	-30.42
9,689.0	1.20	269.50	9,686.7	1.0	-12.2	1.1	0.49	-0.11	-22.11
9,783.0	1.80	279.90	9,780.7	1.2	-14.6	1.3	0.70	0.64	11.06
9,878.0	1.70	277.70	9,875.7	1.7	-17.5	1.8	0.13	-0.11	-2.32
9,974.0	0.40	330.40	9,971.6	2.2	-19.1	2.3	1.55	-1.35	54.90
10,068.0	0.30	337.80	10,065.6	2.7	-19.3	2.8	0.12	-0.11	7.87
10,111.0	0.30	292.70	10,108.6	2.8	-19.5	3.0	0.54	0.00	-104.88
10,164.0	0.80	321.60	10,161.6	3.2	-19.8	3.3	1.05	0.94	54.53
10,171.0	1.51	335.77	10,168.6	3.3	-19.9	3.4	10.91	10.20	202.42
KOP: 10171.0' MD, 10168.6' TVD									
10,195.0	4.10	345.20	10,192.6	4.4	-20.3	4.6	10.91	10.78	39.29
10,226.0	8.60	354.80	10,223.4	7.8	-20.7	7.9	14.86	14.52	30.97
10,259.0	13.70	358.30	10,255.8	14.1	-21.1	14.3	15.58	15.45	10.61
10,291.0	18.50	0.40	10,286.5	23.0	-21.2	23.2	15.11	15.00	6.56
10,322.0	22.10	2.50	10,315.6	33.8	-20.9	33.9	11.85	11.61	6.77
10,354.0	24.50	4.30	10,345.0	46.4	-20.1	46.5	7.82	7.50	5.63
10,386.0	27.10	4.90	10,373.8	60.3	-19.0	60.4	8.17	8.13	1.88
10,418.0	30.30	4.70	10,401.8	75.6	-17.7	75.7	10.00	10.00	-0.63
10,449.0	33.40	4.50	10,428.2	91.9	-16.4	92.0	10.01	10.00	-0.65
10,480.0	36.90	4.60	10,453.5	109.7	-15.0	109.8	11.29	11.29	0.32
10,512.0	40.60	4.00	10,478.5	129.7	-13.5	129.8	11.62	11.56	-1.88
10,544.0	44.10	2.60	10,502.1	151.2	-12.3	151.3	11.33	10.94	-4.38
10,576.0	47.00	1.40	10,524.5	174.0	-11.5	174.1	9.45	9.06	-3.75
10,607.0	50.10	1.90	10,545.0	197.2	-10.8	197.3	10.07	10.00	1.61
10,639.0	53.90	2.30	10,564.7	222.4	-9.9	222.5	11.92	11.88	1.25
10,671.0	58.80	2.70	10,582.5	249.0	-8.7	249.1	15.35	15.31	1.25
10,702.0	63.30	2.90	10,597.5	276.1	-7.4	276.2	14.53	14.52	0.65
10,734.0	67.20	3.10	10,610.9	305.1	-5.9	305.2	12.20	12.19	0.63
10,745.9	68.56	2.74	10,615.3	316.1	-5.3	316.2	11.80	11.46	-2.99
Cross 330' Hardline: 10745.9' MD, 10615.3' TVD, 68.56° INC									
10,768.0	71.10	2.10	10,623.0	336.9	-4.4	336.9	11.80	11.47	-2.91
10,800.0	74.30	1.50	10,632.5	367.4	-3.5	367.4	10.16	10.00	-1.88
10,832.0	77.10	0.80	10,640.4	398.4	-2.8	398.4	9.00	8.75	-2.19
10,863.0	78.90	0.10	10,646.8	428.7	-2.6	428.7	6.21	5.81	-2.26
10,895.0	81.20	359.40	10,652.4	460.2	-2.7	460.2	7.50	7.19	-2.19
10,926.0	83.80	358.70	10,656.4	490.9	-3.2	491.0	8.68	8.39	-2.26
10,958.0	86.60	358.30	10,659.1	522.8	-4.1	522.8	8.84	8.75	-1.25
10,989.0	87.50	359.00	10,660.7	553.8	-4.8	553.8	3.68	2.90	2.26
11,060.0	88.77	359.97	10,663.0	624.7	-5.4	624.8	2.25	1.79	1.37
EOC: 11060.0' MD, 10663.0' TVD, 88.77° INC, 359.97° AZ, 624.8' VS									



Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Site:	Berry APN State	MD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Well:	#5H	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)	
11,084.0	89.20	0.30	10,663.4	648.7	-5.4	648.7	2.25	1.79	1.37	
11,179.0	89.10	0.70	10,664.8	743.7	-4.6	743.7	0.43	-0.11	0.42	
11,274.0	89.20	1.20	10,666.2	838.7	-3.0	838.7	0.54	0.11	0.53	
11,369.0	89.80	1.30	10,667.1	933.7	-0.9	933.6	0.64	0.63	0.11	
11,463.0	88.10	358.90	10,668.8	1,027.6	-0.7	1,027.6	3.13	-1.81	-2.55	
11,559.0	87.90	359.00	10,672.1	1,123.6	-2.5	1,123.5	0.23	-0.21	0.10	
11,653.0	89.30	359.00	10,674.4	1,217.5	-4.1	1,217.5	1.49	1.49	0.00	
11,748.0	90.30	359.00	10,674.8	1,312.5	-5.8	1,312.5	1.05	1.05	0.00	
11,842.0	89.90	359.50	10,674.6	1,406.5	-7.0	1,406.5	0.68	-0.43	0.53	
11,938.0	90.40	359.70	10,674.3	1,502.5	-7.7	1,502.5	0.56	0.52	0.21	
12,033.0	90.40	0.20	10,673.7	1,597.5	-7.8	1,597.5	0.53	0.00	0.53	
12,128.0	90.40	0.80	10,673.0	1,692.5	-7.0	1,692.5	0.63	0.00	0.63	
12,223.0	90.20	0.90	10,672.5	1,787.5	-5.5	1,787.5	0.24	-0.21	0.11	
12,318.0	91.20	0.10	10,671.4	1,882.5	-4.7	1,882.4	1.35	1.05	-0.84	
12,413.0	90.80	359.40	10,669.7	1,977.4	-5.1	1,977.4	0.85	-0.42	-0.74	
12,508.0	90.00	358.30	10,669.0	2,072.4	-7.0	2,072.4	1.43	-0.84	-1.16	
12,603.0	88.50	359.00	10,670.3	2,167.4	-9.3	2,167.4	1.74	-1.58	0.74	
12,698.0	88.40	359.30	10,672.8	2,262.3	-10.7	2,262.3	0.33	-0.11	0.32	
12,793.0	88.30	359.50	10,675.6	2,357.3	-11.7	2,357.3	0.24	-0.11	0.21	
12,888.0	88.00	359.70	10,678.6	2,452.2	-12.3	2,452.3	0.38	-0.32	0.21	
12,983.0	88.70	359.10	10,681.4	2,547.2	-13.3	2,547.2	0.97	0.74	-0.63	
13,078.0	88.40	359.20	10,683.8	2,642.1	-14.7	2,642.2	0.33	-0.32	0.11	
13,173.0	88.70	359.40	10,686.2	2,737.1	-15.9	2,737.2	0.38	0.32	0.21	
13,268.0	88.00	359.10	10,688.9	2,832.1	-17.2	2,832.1	0.80	-0.74	-0.32	
13,362.0	87.30	359.10	10,692.8	2,926.0	-18.6	2,926.0	0.74	-0.74	0.00	
13,457.0	87.40	358.90	10,697.2	3,020.9	-20.3	3,020.9	0.24	0.11	-0.21	
13,553.0	87.50	358.80	10,701.4	3,116.7	-22.2	3,116.8	0.15	0.10	-0.10	
13,648.0	88.70	358.60	10,704.6	3,211.7	-24.4	3,211.8	1.28	1.26	-0.21	
13,742.0	88.50	358.30	10,706.9	3,305.6	-26.9	3,305.7	0.38	-0.21	-0.32	
13,837.0	88.70	358.10	10,709.2	3,400.5	-29.9	3,400.7	0.30	0.21	-0.21	
13,932.0	88.90	358.50	10,711.2	3,495.5	-32.7	3,495.6	0.47	0.21	0.42	
14,027.0	90.20	359.10	10,711.9	3,590.4	-34.7	3,590.6	1.51	1.37	0.63	
14,122.0	90.80	359.40	10,711.1	3,685.4	-35.9	3,685.6	0.71	0.63	0.32	
14,217.0	90.90	359.00	10,709.7	3,780.4	-37.3	3,780.6	0.43	0.11	-0.42	
14,312.0	89.40	359.50	10,709.5	3,875.4	-38.5	3,875.6	1.66	-1.58	0.53	
14,407.0	89.60	0.00	10,710.3	3,970.4	-38.9	3,970.6	0.57	0.21	0.53	
14,502.0	88.70	0.40	10,711.7	4,065.4	-38.6	4,065.6	1.04	-0.95	0.42	
14,597.0	89.90	0.10	10,712.9	4,160.4	-38.2	4,160.5	1.30	1.26	-0.32	
14,692.0	90.30	0.40	10,712.7	4,255.4	-37.8	4,255.5	0.53	0.42	0.32	
14,786.0	90.60	0.40	10,712.0	4,349.4	-37.1	4,349.5	0.32	0.32	0.00	
14,881.0	90.30	359.70	10,711.2	4,444.4	-37.0	4,444.5	0.80	-0.32	-0.74	
14,976.0	90.00	0.00	10,711.0	4,539.4	-37.3	4,539.5	0.45	-0.32	0.32	
15,071.0	89.60	359.60	10,711.3	4,634.4	-37.6	4,634.5	0.60	-0.42	-0.42	
15,166.0	89.40	358.90	10,712.1	4,729.3	-38.8	4,729.5	0.77	-0.21	-0.74	



Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Site:	Berry APN State	MD Reference:	RKB @ 3736.5usft (McVay #4 - KB = 18.5')
Well:	#5H	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)
15,241.0	88.90	358.30	10,713.2	4,804.3	-40.7	4,804.5	1.04	-0.67	-0.80
Final MWD Survey: 15241.0' MD, 10713.2' TVD									
15,300.0	88.90	358.30	10,714.4	4,863.3	-42.4	4,863.5	0.00	0.00	0.00
BHL: 15300.0' MD, 10714.4' TVD, 88.90° INC, 358.30° AZ, 4863.3' +N/-S, -42.4' +E/-W, 4863.5' VS - PBHL(BAS#5H)									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,171.0	10,168.6	3.3	-19.9	KOP: 10171.0' MD, 10168.6' TVD
10,745.9	10,615.3	316.1	-5.3	Cross 330' Hardline:10745.9' MD, 10615.3' TVD, 68.56° INC
11,060.0	10,663.0	624.7	-5.4	EOC: 11060.0' MD, 10663.0' TVD, 88.77° INC, 359.97° AZ, 624.8' VS
15,241.0	10,713.2	4,804.3	-40.7	Final MWD Survey: 15241.0' MD, 10713.2' TVD
15,300.0	10,714.4	4,863.3	-42.4	BHL: 15300.0' MD, 10714.4' TVD, 88.90° INC, 358.30° AZ, 4863.3' +N/-S, -42.4

Checked By: _____ Approved By: _____ Date: _____



Job Number: SVMO-150017
 Company: Yates Petroleum Corporation
 Lease/Well: Berry APN State 005H
 Location: Lea County, NM
 Rig Name: McVay #4
 RKB: 19.5'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 6.71°
 Grid: East To Grid North
 File name: S:\2015SU~1\YATESP~1\MO\BERRYA~1\005H.SVY
 Date/Time: 09-Jan-15 / 10:14
 Curve Name: Surface - 1700' M.D. (Rate Gyro)

MS SURVEY

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane .00
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
 Surface MD to 1700' MD is, to the best of
 our knowledge a true and accurate account of the
 well bore.
 Dustin Bobo 11/9/15
 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	.21	34.10	100.00	.15	.10	.15	.18	34.10	.21
200.00	.29	6.89	200.00	.55	.24	.55	.60	23.03	.14
300.00	.44	13.77	300.00	1.18	.36	1.18	1.23	16.87	.16
400.00	.53	21.15	399.99	1.98	.62	1.98	2.08	17.25	.11
500.00	.37	33.62	499.99	2.68	.96	2.68	2.85	19.71	.19
600.00	.26	60.09	599.99	3.07	1.34	3.07	3.34	23.56	.18
700.00	.20	216.76	699.99	3.04	1.43	3.04	3.36	25.19	.45
800.00	.39	283.65	799.99	2.98	.99	2.98	3.14	18.45	.36
900.00	.11	288.90	899.99	3.09	.57	3.09	3.14	10.49	.28

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	
1000.00	.23	222.29	999.99	2.97	.35	2.97	2.99	6.65	.21
1100.00	.51	221.97	1099.98	2.49	-.09	2.49	2.50	358.02	.28
1200.00	.31	252.41	1199.98	2.08	-.64	2.08	2.18	342.87	.29
1300.00	.20	242.25	1299.98	1.92	-1.05	1.92	2.19	331.21	.12
1400.00	.20	228.96	1399.98	1.72	-1.34	1.72	2.18	322.12	.05
1500.00	.66	241.96	1499.98	1.34	-1.98	1.34	2.39	304.03	.47
1600.00	.58	232.41	1599.97	.76	-2.89	.76	2.99	284.69	.13
Last Survey Depth Recorded									
1700.00	.64	267.02	1699.97	.42	-3.85	.42	3.87	276.23	.37



Job Number: SVMO-150084
 Company: Yates Petroleum Corporation
 Lease/Well: Berry APN State 5H
 Location: Lea County, NM
 Rig Name: McVay #4
 RKB: 18.5'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 6.69°
 Grid: East To Grid North
 File name: S:\2015SU~1\YATESP~1\MOIBERRYA~1\5H.SVY
 Date/Time: 21-Jan-15 / 10:35
 Curve Name: 3800' - 5800' M.D. (Rate Gyro)

MS SURVEY

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 359.56
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
~~3,800~~ MD to ~~5,800~~ MD is, to the best of
 our knowledge a true and accurate account of the
 well bore.
Travis Pack 1/21/15
 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	
3788.00	1.30	62.80	3787.46	10.86	25.80	10.66	27.99	67.17	.00
Tied Rate Gyro Survey Surveys Into Crescent Directional Surveys - Information Provided By Operator									
3800.00	1.00	46.19	3799.46	10.99	26.00	10.79	28.23	67.08	3.71
3900.00	.90	38.01	3899.44	12.22	27.11	12.01	29.74	65.74	.17
4000.00	1.22	46.80	3999.43	13.57	28.37	13.35	31.45	64.44	.36
4100.00	.96	47.06	4099.41	14.86	29.76	14.64	33.26	63.46	.26
4200.00	1.31	39.61	4199.39	16.32	31.10	16.08	35.12	62.32	.38
4300.00	1.37	26.05	4299.36	18.27	32.35	18.02	37.16	60.55	.32
4400.00	1.01	16.93	4399.34	20.19	33.14	19.93	38.80	58.65	.41

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	
4500.00	.66	24.27	4499.33	21.56	33.63	21.30	39.95	57.34	.37
4600.00	1.22	34.65	4599.32	22.96	34.47	22.69	41.42	56.34	.58
4700.00	1.19	47.58	4699.29	24.53	35.84	24.26	43.44	55.61	.27
4800.00	1.19	65.55	4799.27	25.66	37.56	25.37	45.49	55.65	.37
4900.00	1.19	58.42	4899.25	26.64	39.39	26.33	47.55	55.93	.15
5000.00	1.12	58.65	4999.23	27.69	41.10	27.37	49.56	56.03	.07
5100.00	.94	89.05	5099.22	28.21	42.76	27.88	51.23	56.58	.57
5200.00	1.45	93.46	5199.19	28.15	44.84	27.80	52.95	57.88	.52
5300.00	1.83	104.62	5299.15	27.67	47.65	27.30	55.10	59.86	.49
5400.00	1.81	96.78	5399.10	27.08	50.76	26.69	57.53	61.92	.25
5500.00	1.85	95.17	5499.05	26.75	53.94	26.33	60.21	63.62	.07
5600.00	1.43	96.59	5599.01	26.46	56.79	26.02	62.65	65.02	.42
5700.00	1.41	100.27	5698.98	26.10	59.24	25.64	64.73	66.22	.09
Last Survey Depth Recorded									
5800.00	1.20	99.58	5798.95	25.70	61.48	25.23	66.64	67.31	.21