

30-025-41641

HOBBS OCD

MAR 05 2015

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Yates Petroleum

Lea County, NM (NAD-83)

Caravan State Unit

#9H

OH

Design: OH

Standard Survey Report

21 November, 2014

MAP 10 2015

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #9H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Well:	#9H	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	#9H					
Well Position	+N/-S	0.0 usft	Northing:	430,491.80 usft	Latitude:	32° 10' 52.511 N
	+E/-W	0.0 usft	Easting:	774,574.50 usft	Longitude:	103° 34' 46.019 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,483.0 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) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	179.61	

Survey Program	Date 11/21/2014			
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
1,337.0	15,787.0	Survey #2 - Crescent MWD Surveys (OH)	MWD	MWD - Standard

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	
Caravan #6H 90R										
19.3	0.11	356.98	19.3	0.0	0.0	0.0	0.56	0.56	0.00	
Triste 33 State #1 - 207R										
100.0	0.56	356.98	100.0	0.5	0.0	-0.5	0.56	0.56	0.00	
200.0	0.25	137.53	200.0	0.8	0.1	-0.8	0.77	-0.31	140.55	
300.0	0.19	90.63	300.0	0.7	0.4	-0.6	0.18	-0.06	-46.90	
400.0	0.14	290.45	400.0	0.7	0.5	-0.7	0.33	-0.05	-160.18	
500.0	0.22	100.45	500.0	0.7	0.5	-0.7	0.36	0.08	170.00	

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Well:	#9H	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)	
600.0	0.21	215.86	600.0	0.5	0.6	-0.5	0.36	-0.01	115.41	
700.0	0.21	66.60	700.0	0.4	0.7	-0.4	0.40	0.00	-149.26	
800.0	0.31	359.45	800.0	0.8	0.8	-0.8	0.30	0.10	-67.15	
900.0	0.21	328.61	900.0	1.2	0.7	-1.2	0.17	-0.10	-30.84	
1,000.0	0.29	270.72	1,000.0	1.4	0.4	-1.4	0.25	0.08	-57.89	
1,100.0	0.25	246.42	1,100.0	1.3	-0.1	-1.3	0.12	-0.04	-24.30	
1,200.0	0.54	270.52	1,200.0	1.2	-0.7	-1.2	0.33	0.29	24.10	
1,337.0	0.70	276.20	1,337.0	1.3	-2.2	-1.3	0.12	0.12	4.15	
1,526.0	0.60	256.70	1,526.0	1.2	-4.3	-1.2	0.13	-0.05	-10.32	
1,712.0	0.50	235.60	1,712.0	0.5	-5.9	-0.6	0.12	-0.05	-11.34	
1,902.0	1.90	276.40	1,901.9	0.4	-9.7	-0.5	0.82	0.74	21.47	
1,996.0	3.00	277.30	1,995.8	0.9	-13.7	-1.0	1.17	1.17	0.96	
2,091.0	3.00	273.80	2,090.7	1.4	-18.7	-1.5	0.19	0.00	-3.68	
2,280.0	2.60	268.50	2,279.5	1.6	-27.9	-1.8	0.25	-0.21	-2.80	
2,468.0	2.50	264.60	2,467.3	1.1	-36.2	-1.3	0.11	-0.05	-2.07	
2,657.0	2.30	257.60	2,656.1	-0.1	-44.1	-0.2	0.19	-0.11	-3.70	
2,845.0	2.70	261.80	2,843.9	-1.6	-52.1	1.2	0.23	0.21	2.23	
3,034.0	2.50	249.60	3,032.7	-3.6	-60.4	3.2	0.31	-0.11	-6.46	
3,224.0	2.40	258.20	3,222.6	-5.9	-68.2	5.4	0.20	-0.05	4.53	
3,317.0	1.70	266.10	3,315.5	-6.4	-71.5	5.9	0.81	-0.75	8.49	
3,412.0	2.00	281.70	3,410.5	-6.1	-74.5	5.6	0.61	0.32	16.42	
3,506.0	3.00	294.20	3,504.4	-4.8	-78.3	4.3	1.21	1.06	13.30	
3,600.0	3.00	301.20	3,598.2	-2.5	-82.7	2.0	0.39	0.00	7.45	
3,694.0	2.50	299.50	3,692.1	-0.2	-86.6	-0.4	0.54	-0.53	-1.81	
3,788.0	2.10	296.70	3,786.1	1.5	-89.9	-2.2	0.44	-0.43	-2.98	
3,883.0	2.30	294.40	3,881.0	3.1	-93.2	-3.8	0.23	0.21	-2.42	
3,977.0	3.30	295.30	3,974.9	5.1	-97.3	-5.7	1.06	1.06	0.96	
4,072.0	3.30	295.20	4,069.7	7.4	-102.3	-8.1	0.01	0.00	-0.11	
4,167.0	2.80	294.90	4,164.6	9.5	-106.9	-10.3	0.53	-0.53	-0.32	
4,262.0	2.50	294.80	4,259.5	11.4	-110.9	-12.1	0.32	-0.32	-0.11	
4,356.0	2.20	291.80	4,353.4	12.9	-114.4	-13.7	0.34	-0.32	-3.19	
4,450.0	1.90	290.60	4,447.3	14.1	-117.5	-14.9	0.32	-0.32	-1.28	
4,544.0	2.80	290.60	4,541.3	15.5	-121.1	-16.3	0.96	0.96	0.00	
4,639.0	3.10	290.80	4,636.1	17.2	-125.7	-18.1	0.32	0.32	0.21	
4,734.0	2.20	283.20	4,731.0	18.5	-129.9	-19.4	1.01	-0.95	-8.00	
4,829.0	1.70	276.40	4,826.0	19.1	-133.1	-20.0	0.58	-0.53	-7.16	
4,923.0	1.40	279.70	4,919.9	19.5	-135.6	-20.4	0.33	-0.32	3.51	
5,018.0	1.20	285.90	5,014.9	19.9	-137.7	-20.9	0.26	-0.21	6.53	
5,113.0	1.10	289.10	5,109.9	20.5	-139.5	-21.4	0.13	-0.11	3.37	
5,293.0	0.90	279.60	5,289.9	21.3	-142.5	-22.3	0.14	-0.11	-5.28	
5,483.0	0.90	285.20	5,479.9	21.9	-145.4	-22.9	0.05	0.00	2.95	
5,672.0	0.30	261.30	5,668.8	22.3	-147.4	-23.3	0.34	-0.32	-12.65	
5,861.0	0.10	306.50	5,857.8	22.3	-148.0	-23.3	0.13	-0.11	23.92	

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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)
6,049.0	0.20	229.80	6,045.8	22.2	-148.4	-23.2	0.11	0.05	-40.80
6,239.0	0.30	260.80	6,235.8	21.9	-149.1	-22.9	0.09	0.05	16.32
6,430.0	0.20	247.90	6,426.8	21.7	-149.9	-22.7	0.06	-0.05	-6.75
6,619.0	0.30	269.10	6,615.8	21.5	-150.7	-22.6	0.07	0.05	11.22
6,809.0	0.30	308.90	6,805.8	21.8	-151.6	-22.9	0.11	0.00	20.95
6,998.0	0.40	311.80	6,994.8	22.6	-152.5	-23.6	0.05	0.05	1.53
7,187.0	0.40	294.30	7,183.8	23.3	-153.6	-24.3	0.06	0.00	-9.26
7,376.0	0.40	219.00	7,372.8	23.1	-154.6	-24.1	0.26	0.00	-39.84
7,566.0	1.00	169.50	7,562.8	20.9	-154.7	-22.0	0.42	0.32	-26.05
7,755.0	0.40	97.50	7,751.8	19.2	-153.7	-20.2	0.51	-0.32	-38.10
7,946.0	0.70	117.20	7,942.8	18.6	-152.0	-19.6	0.18	0.16	10.31
8,135.0	0.70	104.70	8,131.8	17.8	-149.9	-18.8	0.08	0.00	-6.61
8,325.0	0.60	111.40	8,321.8	17.1	-147.8	-18.1	0.07	-0.05	3.53
8,515.0	0.80	121.30	8,511.7	16.1	-145.8	-17.0	0.12	0.11	5.21
8,704.0	0.30	3.50	8,700.7	15.9	-144.6	-16.8	0.52	-0.26	-62.33
8,799.0	0.30	352.70	8,795.7	16.4	-144.6	-17.3	0.06	0.00	-11.37
8,893.0	0.20	324.70	8,889.7	16.7	-144.8	-17.7	0.16	-0.11	-29.79
8,988.0	0.40	317.60	8,984.7	17.1	-145.1	-18.1	0.21	0.21	-7.47
9,083.0	1.00	328.50	9,079.7	18.1	-145.7	-19.1	0.64	0.63	11.47
9,178.0	0.10	187.50	9,174.7	18.7	-146.2	-19.7	1.14	-0.95	-148.42
9,273.0	0.30	123.50	9,269.7	18.5	-146.0	-19.5	0.29	0.21	-67.37
9,367.0	0.40	353.80	9,363.7	18.7	-145.8	-19.6	0.68	0.11	-137.98
9,461.0	0.80	318.60	9,457.7	19.5	-146.3	-20.5	0.56	0.43	-37.45
9,555.0	1.10	303.20	9,551.7	20.5	-147.5	-21.5	0.42	0.32	-16.38
9,650.0	0.90	0.90	9,646.7	21.7	-148.2	-22.7	1.03	-0.21	60.74
9,744.0	0.40	72.30	9,740.7	22.5	-147.9	-23.6	0.92	-0.53	75.96
9,839.0	0.10	225.00	9,835.7	22.6	-147.7	-23.6	0.52	-0.32	160.74
9,933.0	0.70	236.20	9,929.7	22.2	-148.2	-23.2	0.64	0.64	11.91
10,029.0	0.80	235.00	10,025.7	21.5	-149.2	-22.5	0.11	0.10	-1.25
10,124.0	0.50	260.30	10,120.7	21.1	-150.2	-22.1	0.43	-0.32	26.63
10,219.0	0.50	248.00	10,215.7	20.8	-151.0	-21.9	0.11	0.00	-12.95
10,313.0	0.40	236.90	10,309.7	20.5	-151.6	-21.5	0.14	-0.11	-11.81
10,408.0	0.80	253.90	10,404.7	20.1	-152.5	-21.2	0.46	0.42	17.89
10,503.0	1.40	243.60	10,499.6	19.4	-154.2	-20.5	0.66	0.63	-10.84
10,596.0	2.30	212.40	10,592.6	17.3	-156.2	-18.4	1.42	0.97	-33.55
KOP: 10596.0' MD, 10592.6' TVD									
10,635.0	6.80	182.90	10,631.5	14.4	-156.8	-15.4	12.64	11.54	-75.64
10,682.0	13.20	178.90	10,677.7	6.2	-156.8	-7.3	13.69	13.62	-8.51
10,725.0	18.20	178.90	10,719.1	-5.4	-156.6	4.3	11.63	11.63	0.00
10,777.0	24.00	177.10	10,767.6	-24.1	-155.9	23.0	11.22	11.15	-3.46
10,824.0	29.10	178.00	10,809.6	-45.1	-155.0	44.0	10.88	10.85	1.91
10,871.0	33.40	179.92	10,849.8	-69.5	-154.6	68.4	9.39	9.15	4.09
10,918.0	37.80	181.20	10,888.0	-96.8	-154.9	95.7	9.49	9.36	2.72
10,965.0	42.50	182.40	10,923.9	-127.1	-155.8	126.0	10.13	10.00	2.55

Survey Report

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11,013.0	48.30	181.70	10,957.6	-161.2	-157.1	160.2	12.13	12.08	-1.46
11,060.0	52.80	177.70	10,987.5	-197.5	-156.8	196.4	11.61	9.57	-8.51
11,108.0	59.60	177.10	11,014.2	-237.3	-155.0	236.3	14.20	14.17	-1.25
11,155.0	66.50	177.80	11,035.5	-279.1	-153.2	278.1	14.74	14.68	1.49
11,172.7	68.64	178.59	11,042.2	-295.5	-152.6	294.5	12.76	12.07	4.48
Cross 330' Hardline: 11172.7' MD, 11042.2' TVD, 68.64° INC									
11,203.0	72.30	179.90	11,052.3	-324.0	-152.3	323.0	12.76	12.09	4.31
11,250.0	76.00	182.60	11,065.2	-369.2	-153.3	368.2	9.62	7.87	5.74
11,298.0	81.50	182.50	11,074.5	-416.2	-155.4	415.2	11.46	11.46	-0.21
11,328.0	86.00	182.10	11,077.8	-446.0	-156.6	445.0	15.06	15.00	-1.33
11,358.0	88.91	182.10	11,079.1	-476.0	-157.7	474.9	9.69	9.69	0.00
EOC: 11358.0' MD, 11079.1' TVD, 88.91° INC, 182.10° AZ, 474.9' VS									
11,360.0	89.10	182.10	11,079.2	-478.0	-157.7	476.9	9.69	9.69	0.00
11,423.0	89.80	182.30	11,079.8	-540.9	-160.1	539.8	1.16	1.11	0.32
11,517.0	91.10	182.70	11,079.0	-634.8	-164.2	633.7	1.45	1.38	0.43
11,612.0	90.70	183.40	11,077.5	-729.7	-169.3	728.5	0.85	-0.42	0.74
11,707.0	90.50	181.90	11,076.5	-824.6	-173.7	823.4	1.59	-0.21	-1.58
11,801.0	90.10	182.20	11,076.1	-918.5	-177.1	917.3	0.53	-0.43	0.32
11,896.0	90.70	181.80	11,075.4	-1,013.5	-180.4	1,012.2	0.76	0.63	-0.42
11,991.0	90.80	181.50	11,074.2	-1,108.4	-183.1	1,107.1	0.33	0.11	-0.32
12,086.0	90.80	181.40	11,072.8	-1,203.4	-185.5	1,202.1	0.11	0.00	-0.11
12,181.0	91.10	181.30	11,071.2	-1,298.3	-187.7	1,297.0	0.33	0.32	-0.11
12,275.0	90.40	182.60	11,070.0	-1,392.3	-190.9	1,390.9	1.57	-0.74	1.38
12,369.0	90.30	182.40	11,069.4	-1,486.2	-195.0	1,484.8	0.24	-0.11	-0.21
12,464.0	90.20	182.70	11,069.0	-1,581.1	-199.3	1,579.7	0.33	-0.11	0.32
12,559.0	90.30	182.70	11,068.6	-1,676.0	-203.7	1,674.6	0.11	0.11	0.00
12,653.0	89.80	181.80	11,068.5	-1,769.9	-207.4	1,768.5	1.10	-0.53	-0.96
12,749.0	89.40	180.20	11,069.2	-1,865.9	-209.1	1,864.4	1.72	-0.42	-1.67
12,842.0	89.40	177.70	11,070.2	-1,958.9	-207.4	1,957.4	2.69	0.00	-2.69
12,937.0	90.20	176.10	11,070.5	-2,053.7	-202.3	2,052.3	1.88	0.84	-1.68
13,032.0	90.30	176.00	11,070.1	-2,148.5	-195.7	2,147.1	0.15	0.11	-0.11
13,127.0	90.70	175.90	11,069.3	-2,243.2	-189.0	2,241.9	0.43	0.42	-0.11
13,222.0	90.20	175.60	11,068.5	-2,338.0	-182.0	2,336.7	0.61	-0.53	-0.32
13,317.0	90.70	175.40	11,067.8	-2,432.7	-174.5	2,431.4	0.57	0.53	-0.21
13,411.0	90.60	175.70	11,066.7	-2,526.4	-167.2	2,525.2	0.34	-0.11	0.32
13,506.0	90.70	175.10	11,065.6	-2,621.1	-159.6	2,619.9	0.64	0.11	-0.63
13,601.0	90.90	174.90	11,064.3	-2,715.7	-151.3	2,714.6	0.30	0.21	-0.21
13,697.0	90.60	175.00	11,063.0	-2,811.3	-142.9	2,810.3	0.33	-0.31	0.10
13,792.0	90.20	175.20	11,062.4	-2,906.0	-134.8	2,905.0	0.47	-0.42	0.21
13,887.0	89.90	175.10	11,062.3	-3,000.6	-126.7	2,999.7	0.33	-0.32	-0.11
13,981.0	89.90	175.80	11,062.5	-3,094.3	-119.3	3,093.5	0.74	0.00	0.74
14,076.0	90.80	175.80	11,061.9	-3,189.1	-112.3	3,188.2	0.95	0.95	0.00
14,170.0	90.40	176.10	11,060.9	-3,282.8	-105.7	3,282.0	0.53	-0.43	0.32
14,265.0	91.30	175.30	11,059.5	-3,377.6	-98.6	3,376.8	1.27	0.95	-0.84

Survey Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #9H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Site:	Caravan State Unit	MD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Well:	#9H	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)
14,360.0	91.30	175.50	11,057.3	-3,472.2	-90.9	3,471.5	0.21	0.00	0.21
14,455.0	90.40	174.50	11,055.9	-3,566.9	-82.7	3,566.2	1.42	-0.95	-1.05
14,549.0	90.50	174.40	11,055.2	-3,660.4	-73.6	3,659.8	0.15	0.11	-0.11
14,644.0	89.50	174.30	11,055.2	-3,754.9	-64.2	3,754.4	1.06	-1.05	-0.11
14,738.0	89.50	175.00	11,056.0	-3,848.5	-55.5	3,848.1	0.74	0.00	0.74
14,833.0	89.30	174.70	11,057.0	-3,943.1	-46.9	3,942.7	0.38	-0.21	-0.32
14,927.0	90.10	174.70	11,057.5	-4,036.7	-38.2	4,036.4	0.85	0.85	0.00
15,021.0	90.00	174.80	11,057.4	-4,130.3	-29.6	4,130.1	0.15	-0.11	0.11
15,116.0	90.50	175.10	11,057.0	-4,225.0	-21.3	4,224.7	0.61	0.53	0.32
15,211.0	90.40	175.10	11,056.3	-4,319.6	-13.2	4,319.4	0.11	-0.11	0.00
15,306.0	90.50	175.00	11,055.5	-4,414.3	-5.0	4,414.1	0.15	0.11	-0.11
15,400.0	90.60	175.50	11,054.6	-4,507.9	2.8	4,507.9	0.54	0.11	0.53
15,496.0	90.50	175.90	11,053.7	-4,603.7	10.0	4,603.6	0.43	-0.10	0.42
15,559.0	90.10	175.60	11,053.4	-4,666.5	14.7	4,666.5	0.79	-0.63	-0.48
15,653.0	90.10	176.10	11,053.2	-4,760.2	21.5	4,760.3	0.53	0.00	0.53
15,729.0	90.10	176.10	11,053.1	-4,836.1	26.6	4,836.1	0.00	0.00	0.00
Last MWD Survey: 15496.0' MD, 90.50° INC, 175.90° AZ									
15,787.0	90.10	176.10	11,053.0	-4,893.9	30.6	4,894.0	0.00	0.00	0.00
BHL: 15787.0' MD, 11053.0' TVD, 90.10° INC, 176.10° AZ, -4893.9' +N/-S, 30.6' +E/-W, 4894.0' VS - PBHL(CSU#9H)									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,596.0	10,592.6	17.3	-156.2	KOP: 10596.0' MD, 10592.6' TVD
11,172.7	11,042.2	-295.5	-152.6	Cross 330' Hardline: 11172.7' MD, 11042.2' TVD, 68.64° INC
11,358.0	11,079.1	-476.0	-157.7	EOC: 11358.0' MD, 11079.1' TVD, 88.91° INC, 182.10° AZ, 474.9' VS
15,729.0	11,053.1	-4,836.1	26.6	Last MWD Survey: 15496.0' MD, 90.50° INC, 175.90° AZ
15,787.0	11,053.0	-4,893.9	30.6	BHL: 15787.0' MD, 11053.0' TVD, 90.10° INC, 176.10° AZ, -4893.9' +N/-S, 30.6

Checked By: _____	Approved By: _____	Date: _____
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Yates Petroleum
Project: Lea County, NM (NAD-83)
Site: Caravan State Unit
Well: #9H
Wellbore: OH
Plan: Plan #1 (#9H/OH)

WELL DETAILS: #9H

Ground Elevation:: 3483.0
RKB Elevation: RKB @ 3508.0usft (Cactus 124 - KB=25')
Rig Name: Cactus 124 - KB=25'

Surface Hole Location

Northing 430491.80 Easting 774574.50 Latitude 32° 10' 52.511 N Longitude 103° 34' 46.019 W



Azimuths to Grid North
True North: -0.40°
Magnetic North: 6.78°

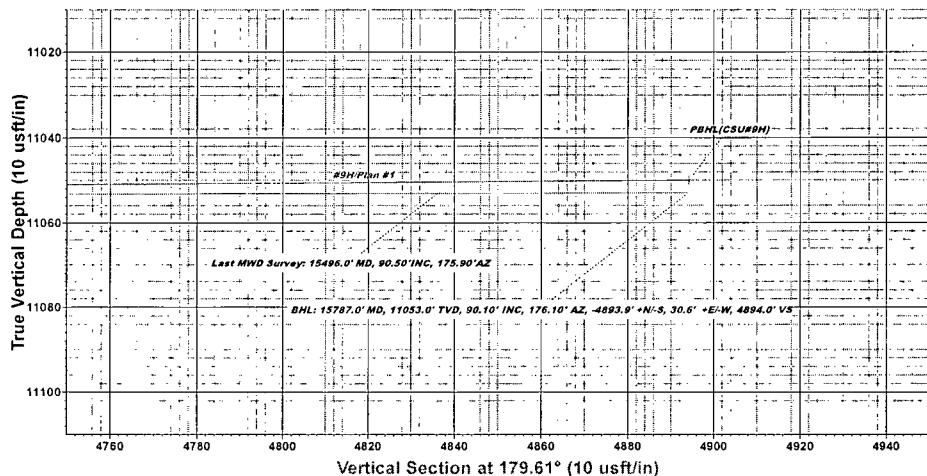
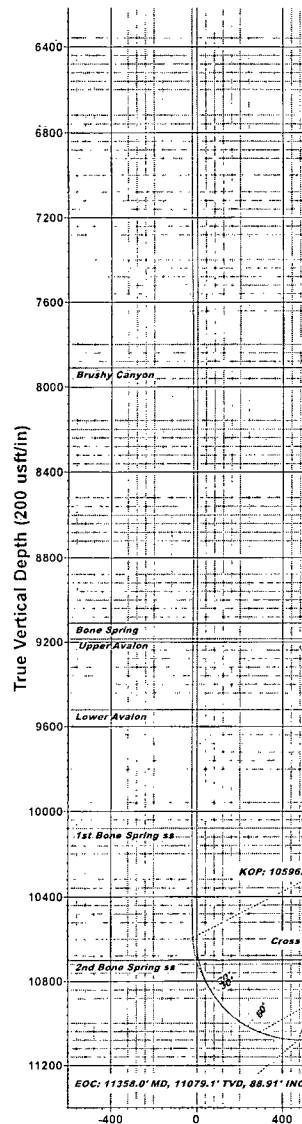
Magnetic Field
Strength: 48261.4snT
Dip Angle: 60.06°
Date: 9/24/2014
Model: IGRF2010

Section Details

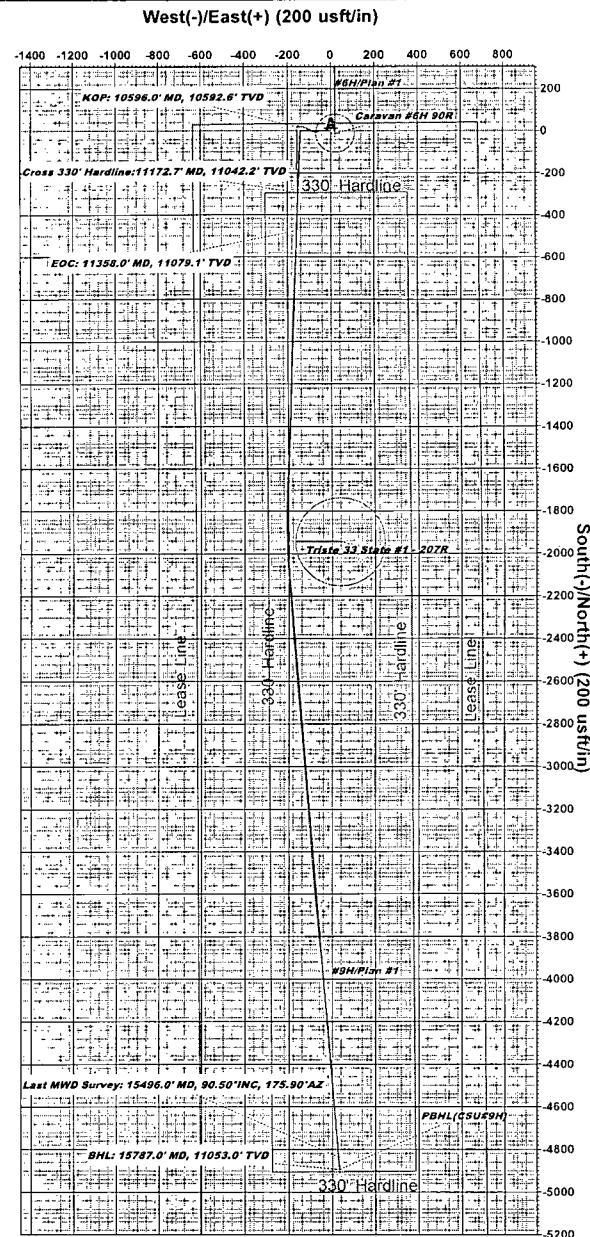
	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0
3	2200.0	3.00	270.00	2199.9	0.0	-5.2	1.50	270.00	0.0
4	4700.0	3.00	270.00	4696.5	0.0	-136.1	0.00	0.00	-0.9
5	4900.0	0.00	0.00	4896.4	0.0	-141.3	1.50	180.00	-1.0
6	10606.1	0.00	0.00	10602.5	0.0	-141.3	0.00	0.00	-1.0
7	11359.4	90.39	182.00	11080.0	-480.4	-158.1	12.00	182.00	479.3
8	12659.4	90.39	182.00	11071.1	-1779.6	-203.5	0.00	0.00	1778.2
9	12994.6	90.39	175.30	11068.8	-2114.5	-195.5	2.00	-90.00	2113.2
10	15783.6	90.39	175.30	11050.0	-4894.1	33.2	0.00	0.00	4894.2

DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting
Caravan #6H 90R	-11.5	20.0	430480.30	774594.50
Trista 33 State #1 - 207R	-1943.9	38.4	428547.88	774612.85
PBHL(CSUS9H)	-4894.1	33.2	425597.70	774607.70



Vertical Section at 179.61° (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 #1 (#9H/OH)
Created By: Adrian Castro Date: 6:38, November 21 2014

30-025-41641

HOBBS OCD

MAR 05 2015

RECEIVED

Yates Petroleum

Lea County, NM (NAD-83)

Caravan State Unit

#9H

OH

OH

Anticollision Report

21 November, 2014

Anticollision Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #9H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Reference Site:	Caravan State Unit	MD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#9H	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 11/21/2014				
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	
1,337.0	15,787.0	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						
#6H - OH - Plan #1	741.6	738.6	22.7	15.2	3.014	CC
#6H - OH - Plan #1	1,200.0	1,197.0	24.3	11.7	1.927	ES
#6H - OH - Plan #1	1,337.0	1,334.0	25.6	12.1	1.894	SF
Triste 33 State #1 - OH - OH	12,830.3	11,043.6	93.1	29.1	1.455	Level 3, CC, ES, SF

Offset Design		Caravan State Unit - #6H - OH - Plan #1										Offset Site Error: 0.0 usft	
Survey Program: 0-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
200.0	200.0	197.0	197.0	1.3	0.3	-15.78	-11.5	20.0	23.4	21.8	1.56	14.985	
300.0	300.0	297.0	297.0	2.1	0.5	31.18	-11.5	20.0	23.1	20.4	2.65	8.703	
354.2	354.2	351.2	351.2	2.6	0.6	90.00	-11.5	20.0	23.0	19.7	3.27	7.025	
400.0	400.0	397.0	397.0	3.0	0.8	-168.48	-11.5	20.0	23.0	19.2	3.80	6.066	
500.0	500.0	497.0	497.0	3.9	1.0	21.63	-11.5	20.0	23.0	18.1	4.87	4.713	
593.3	593.3	590.3	590.3	4.7	1.2	-90.00	-11.5	20.0	22.8	16.9	5.89	3.871	
600.0	600.0	597.0	597.0	4.8	1.2	-94.06	-11.5	20.0	22.8	16.8	5.97	3.823	
700.0	700.0	697.0	697.0	5.6	1.4	55.12	-11.5	20.0	22.7	15.7	7.06	3.220	
741.6	741.6	738.6	738.6	6.0	1.5	90.00	-11.5	20.0	22.7	15.2	7.52	3.014 CC	
800.0	800.0	797.0	797.0	6.5	1.7	123.22	-11.5	20.0	22.8	14.6	8.18	2.783	
900.0	900.0	897.0	897.0	7.4	1.9	154.82	-11.5	20.0	23.1	13.8	9.29	2.485	
1,000.0	1,000.0	997.0	997.0	8.3	2.1	-147.43	-11.5	20.0	23.5	13.0	10.42	2.251	
1,100.0	1,100.0	1,097.0	1,097.0	9.2	2.3	-123.90	-11.5	20.0	23.8	12.3	11.52	2.064	
1,200.0	1,200.0	1,197.0	1,197.0	10.1	2.5	-149.01	-11.5	20.0	24.3	11.7	12.61	1.927 ES	
1,337.0	1,337.0	1,334.0	1,334.0	10.7	2.9	-156.24	-11.5	20.0	25.6	12.1	13.53	1.894 SF	
1,526.0	1,526.0	1,523.0	1,523.0	10.7	3.3	-139.13	-11.5	20.0	27.4	13.5	13.97	1.964	
1,712.0	1,712.0	1,709.0	1,709.0	10.7	3.7	-120.74	-11.5	20.0	28.6	14.2	14.42	1.983	
1,902.0	1,901.9	1,898.9	1,898.9	10.8	4.1	-164.59	-11.5	20.0	32.0	17.2	14.88	2.153	
1,996.0	1,995.8	1,992.8	1,992.8	10.8	4.3	-167.13	-11.5	20.0	35.9	20.8	15.11	2.379	
2,091.0	2,090.7	2,087.7	2,087.7	10.8	4.6	-165.38	-11.5	20.0	40.8	25.4	15.35	2.656	
2,280.0	2,279.5	2,276.5	2,276.5	10.9	5.0	-163.21	-11.5	20.0	49.7	33.8	15.85	3.133	
2,468.0	2,467.3	2,464.3	2,464.3	11.0	5.4	-161.97	-11.5	20.0	57.6	41.3	16.36	3.523	

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 #9H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Reference Site:	Caravan State Unit	MD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#9H	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 - #6H - OH - Plan #1													Offset Well Error:	0.0 usft
Survey Program: 0-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		
2,657.0	2,656.1	2,653.1	2,653.1	11.1	5.8	-157.51	-11.5	20.0	65.1	48.2	16.89	3.851		
2,845.0	2,843.9	2,840.9	2,840.9	11.2	6.2	-163.94	-11.5	20.0	72.8	55.4	17.42	4.178		
3,034.0	3,032.7	3,029.7	3,029.7	11.4	6.7	-153.99	-11.5	20.0	80.8	62.8	17.98	4.493		
3,224.0	3,222.6	3,219.6	3,219.6	11.5	7.1	-164.55	-11.5	20.0	88.3	69.8	18.54	4.764		
3,317.0	3,315.5	3,312.5	3,312.5	11.6	7.3	-172.89	-11.5	20.0	91.6	72.8	18.83	4.865		
3,412.0	3,410.5	3,407.5	3,407.5	11.7	7.5	-171.54	-11.5	20.0	94.6	75.5	19.11	4.951		
3,506.0	3,504.4	3,501.4	3,501.4	11.7	7.7	-159.67	-11.5	20.0	98.6	79.2	19.39	5.083		
3,600.0	3,598.2	3,595.2	3,595.2	11.8	7.9	-153.77	-11.5	20.0	103.1	83.4	19.68	5.237		
3,694.0	3,692.1	3,689.1	3,689.1	11.9	8.2	-156.51	-11.5	20.0	107.2	87.2	19.98	5.363		
3,788.0	3,786.1	3,783.1	3,783.1	12.0	8.4	-160.06	-11.5	20.0	110.7	90.4	20.29	5.455		
3,883.0	3,881.0	3,878.0	3,878.0	12.1	8.6	-162.95	-11.5	20.0	114.1	93.5	20.59	5.543		
3,977.0	3,974.9	3,971.9	3,971.9	12.2	8.8	-162.70	-11.5	20.0	118.5	97.6	20.88	5.677		
4,072.0	4,069.7	4,066.7	4,066.7	12.3	9.0	-163.55	-11.5	20.0	123.7	102.6	21.19	5.841		
4,167.0	4,164.6	4,161.6	4,161.6	12.4	9.2	-164.49	-11.5	20.0	128.6	107.1	21.51	5.980		
4,262.0	4,259.5	4,256.5	4,256.5	12.5	9.4	-165.10	-11.5	20.0	132.8	111.0	21.83	6.086		
4,356.0	4,353.4	4,350.4	4,350.4	12.6	9.6	-168.48	-11.5	20.0	136.6	114.4	22.15	6.168		
4,450.0	4,447.3	4,444.3	4,444.3	12.8	9.8	-169.95	-11.5	20.0	139.9	117.4	22.47	6.226		
4,544.0	4,541.3	4,538.3	4,538.3	12.9	10.1	-170.21	-11.5	20.0	143.7	120.9	22.77	6.309		
4,639.0	4,636.1	4,633.1	4,633.1	13.0	10.3	-170.33	-11.5	20.0	148.5	125.4	23.09	6.432		
4,734.0	4,731.0	4,728.0	4,728.0	13.1	10.5	-178.13	-11.5	20.0	152.9	129.4	23.43	6.524		
4,829.0	4,826.0	4,823.0	4,823.0	13.2	10.7	-175.09	-11.5	20.0	156.1	132.3	23.77	6.568		
4,923.0	4,919.9	4,916.9	4,916.9	13.4	10.9	-178.45	-11.5	20.0	158.6	134.5	24.10	6.583		
5,018.0	5,014.9	5,011.9	5,011.9	13.5	11.1	-175.37	-11.5	20.0	160.8	136.3	24.43	6.581		
5,113.0	5,109.9	5,106.9	5,106.9	13.6	11.3	-172.24	-11.5	20.0	162.7	137.9	24.76	6.569		
5,293.0	5,289.9	5,286.9	5,286.9	13.8	11.7	-178.19	-11.5	20.0	165.8	140.4	25.41	6.526		
5,483.0	5,479.9	5,476.9	5,476.9	14.1	12.2	-176.23	-11.5	20.0	168.8	142.7	26.09	6.470		
5,672.0	5,668.8	5,665.8	5,665.8	14.4	12.6	-159.90	-11.5	20.0	170.7	144.0	26.77	6.377		
5,861.0	5,857.8	5,854.8	5,854.8	14.6	13.0	-154.87	-11.5	20.0	171.3	143.9	27.46	6.239		
6,049.0	6,045.8	6,042.8	6,042.8	14.9	13.4	-128.49	-11.5	20.0	171.7	143.5	28.16	6.098		
6,239.0	6,235.8	6,232.8	6,232.8	15.2	13.9	-159.64	-11.5	20.0	172.4	143.5	28.85	5.974		
6,430.0	6,426.8	6,423.8	6,423.8	15.4	14.3	-146.86	-11.5	20.0	173.1	143.6	29.56	5.856		
6,619.0	6,615.8	6,612.8	6,612.8	15.7	14.7	-168.15	-11.5	20.0	173.9	143.6	30.27	5.744		
6,809.0	6,805.8	6,802.8	6,802.8	16.0	15.1	-152.09	-11.5	20.0	174.8	143.8	30.98	5.642		
6,998.0	6,994.8	6,991.8	6,991.8	16.3	15.6	-149.38	-11.5	20.0	175.8	144.1	31.69	5.547		
7,187.0	7,183.8	7,180.8	7,180.8	16.6	16.0	-167.04	-11.5	20.0	177.0	144.6	32.41	5.462		
7,376.0	7,372.8	7,369.8	7,369.8	16.9	16.4	-117.80	-11.5	20.0	178.0	144.8	33.14	5.370		
7,566.0	7,562.8	7,559.8	7,559.8	17.2	16.9	-68.99	-11.5	20.0	177.7	143.8	33.88	5.245		
7,755.0	7,751.8	7,748.8	7,748.8	17.5	17.3	2.52	-11.5	20.0	176.4	141.8	34.61	5.098		
7,946.0	7,942.8	7,939.8	7,939.8	17.8	17.7	-17.28	-11.5	20.0	174.7	139.3	35.35	4.940		
8,135.0	8,131.8	8,128.8	8,128.8	18.1	18.1	-4.93	-11.5	20.0	172.4	136.3	36.10	4.776		
8,325.0	8,321.8	8,318.8	8,318.8	18.4	18.6	-11.73	-11.5	20.0	170.3	133.4	36.84	4.622		
8,515.0	8,511.7	8,508.7	8,508.7	18.7	19.0	-21.87	-11.5	20.0	168.1	130.5	37.59	4.471		
8,696.4	8,693.2	8,690.2	8,690.2	19.1	19.4	90.00	-11.5	20.0	166.9	128.6	38.31	4.356		
8,704.0	8,700.7	8,697.7	8,697.7	19.1	19.4	95.94	-11.5	20.0	166.9	128.5	38.34	4.353		
8,799.0	8,795.7	8,792.7	8,792.7	19.2	19.6	106.90	-11.5	20.0	167.0	128.3	38.72	4.313		
8,893.0	8,889.7	8,886.7	8,886.7	19.4	19.8	135.02	-11.5	20.0	167.2	128.1	39.09	4.277		
8,988.0	8,984.7	8,981.7	8,981.7	19.5	20.0	142.23	-11.5	20.0	167.6	128.1	39.47	4.245		
9,083.0	9,079.7	9,076.7	9,076.7	19.7	20.3	131.61	-11.5	20.0	168.4	128.5	39.84	4.226		
9,178.0	9,174.7	9,171.7	9,171.7	19.9	20.5	-87.20	-11.5	20.0	168.9	128.7	40.22	4.199		
9,273.0	9,269.7	9,266.7	9,266.7	20.0	20.7	-23.27	-11.5	20.0	168.7	128.1	40.60	4.154		
9,339.6	9,336.3	9,333.3	9,333.3	20.2	20.8	90.00	-11.5	20.0	168.5	127.6	40.87	4.123		
9,367.0	9,363.7	9,360.7	9,360.7	20.2	20.9	106.51	-11.5	20.0	168.5	127.6	40.98	4.113		

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

Anticollision Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #9H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Reference Site:	Caravan State Unit	MD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#9H	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

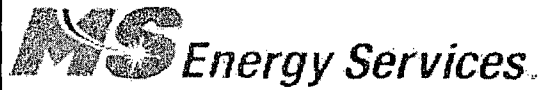
Offset Design														Offset Site Error:
Caravan State Unit - #6H - OH - Plan #1														0.0 usft
Survey Program: 0-MWD														Offset Well Error: 0.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured 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		
9,461.0	9,457.7	9,454.7	9,454.7	20.4	21.1	141.95	-11.5	20.0	169.2	127.8	41.36	4.090		
9,555.0	9,551.7	9,548.7	9,548.7	20.5	21.3	157.60	-11.5	20.0	170.5	128.8	41.73	4.086		
9,850.0	9,846.7	9,843.7	9,843.7	20.7	21.5	100.27	-11.5	20.0	171.5	129.4	42.12	4.072		
9,744.0	9,740.7	9,737.7	9,737.7	20.9	21.7	29.16	-11.5	20.0	171.3	128.8	42.50	4.032		
9,826.0	9,822.7	9,819.7	9,819.7	21.0	21.9	-90.00	-11.5	20.0	171.1	128.2	42.83	3.994		
9,839.0	9,835.7	9,832.7	9,832.7	21.0	22.0	-123.51	-11.5	20.0	171.1	128.2	42.88	3.990		
9,933.0	9,929.7	9,926.7	9,926.7	21.2	22.2	-134.86	-11.5	20.0	171.5	128.3	43.26	3.965		
10,029.0	10,025.7	10,022.7	10,022.7	21.4	22.4	-133.96	-11.5	20.0	172.4	128.8	43.65	3.950		
10,124.0	10,120.7	10,117.7	10,117.7	21.6	22.6	-159.47	-11.5	20.0	173.3	129.2	44.04	3.934		
10,219.0	10,215.7	10,212.7	10,212.7	21.7	22.8	-147.29	-11.5	20.0	174.0	129.6	44.42	3.917		
10,313.0	10,309.7	10,306.7	10,306.7	21.9	23.0	-136.34	-11.5	20.0	174.6	129.8	44.81	3.896		
10,408.0	10,404.7	10,401.7	10,401.7	22.1	23.2	-153.51	-11.5	20.0	175.4	130.2	45.20	3.881		
10,503.0	10,499.6	10,496.6	10,496.6	22.3	23.5	-143.52	-11.5	20.0	176.9	131.4	45.58	3.882		
10,596.0	10,592.6	10,589.6	10,589.6	22.4	23.7	-113.09	-11.5	20.0	178.6	132.6	45.96	3.885		
10,635.0	10,631.5	10,630.3	10,630.3	22.5	23.8	-85.03	-10.4	20.0	178.5	132.4	46.12	3.870		
10,682.0	10,677.7	10,677.2	10,676.8	22.6	23.9	-85.58	-4.9	20.0	177.1	130.8	46.31	3.825		
10,713.1	10,707.8	10,705.4	10,704.5	22.7	23.9	-89.68	0.6	19.9	176.6	130.2	46.43	3.803		
10,725.0	10,719.1	10,715.5	10,714.3	22.7	23.9	-91.36	3.0	19.9	176.7	130.2	46.48	3.802		
10,777.0	10,767.6	10,754.8	10,751.9	22.8	24.0	-96.95	14.2	19.8	180.3	133.7	46.62	3.867		
10,824.0	10,809.6	10,783.4	10,778.7	22.9	24.1	-103.22	24.2	19.8	190.1	143.5	46.60	4.079		
10,871.0	10,849.8	10,806.0	10,799.4	22.9	24.1	-108.83	33.3	19.7	207.8	161.4	46.40	4.478		
10,918.0	10,888.0	10,825.0	10,816.5	23.0	24.2	-112.28	41.7	19.6	233.1	186.9	46.14	5.052		
10,965.0	10,923.9	10,836.3	10,826.5	23.2	24.2	-112.57	47.0	19.6	264.6	218.5	46.03	5.748		
11,013.0	10,957.6	10,845.0	10,834.1	23.3	24.2	-107.84	51.2	19.6	301.4	255.0	46.46	6.488		
11,060.0	10,987.5	10,850.0	10,838.4	23.4	24.2	-99.48	53.7	19.5	339.9	292.7	47.24	7.196		
11,108.0	11,014.2	10,850.0	10,838.4	23.6	24.2	-88.06	53.7	19.5	380.8	333.1	47.70	7.983		
11,155.0	11,035.5	10,850.0	10,838.4	23.8	24.2	-75.49	53.7	19.5	422.2	375.3	46.91	9.000		
11,203.0	11,052.3	10,850.0	10,838.4	24.0	24.2	-63.45	53.7	19.5	465.5	420.9	44.61	10.436		
11,250.0	11,065.2	10,840.2	10,829.9	24.3	24.2	-51.46	48.9	19.6	508.6	467.6	40.92	12.428		
11,298.0	11,074.5	10,833.2	10,823.7	24.5	24.2	-41.35	45.5	19.6	552.5	515.7	36.75	15.033		
11,328.0	11,077.8	10,825.0	10,816.5	24.7	24.2	-35.32	41.7	19.6	579.3	545.4	33.95	17.063		
11,360.0	11,079.2	10,825.0	10,816.5	24.9	24.2	-32.18	41.7	19.6	607.4	574.8	32.56	18.655		

Anticollision Report

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #9H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Reference Site:	Caravan State Unit	MD Reference:	RKB @ 3508.0usft (Cactus 124 - KB=25')
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	#9H	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 - Triste 33 State #1 - OH - OH													Offset Well Error:	0.0 usft
Survey Program: 237-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		
11,801.0	11,076.1	11,049.2	11,048.1	28.5	23.2	-91.49	-1,943.9	-114.9	1,027.3	975.8	51.50	19.947		
11,896.0	11,075.4	11,048.6	11,047.5	29.4	23.2	-97.37	-1,943.9	-114.9	932.8	880.6	52.19	17.872		
11,991.0	11,074.2	11,047.4	11,046.3	30.5	23.2	-97.95	-1,943.9	-114.9	838.3	785.1	53.18	15.764		
12,086.0	11,072.8	11,046.1	11,045.0	31.5	23.2	-97.24	-1,943.9	-114.9	743.9	689.6	54.30	13.700		
12,181.0	11,071.2	11,044.6	11,043.4	32.7	23.2	-98.67	-1,943.9	-114.8	649.7	594.4	55.31	11.747		
12,275.0	11,070.0	11,043.4	11,042.3	33.8	23.2	-92.75	-1,943.9	-114.8	556.9	500.0	56.86	9.794		
12,369.0	11,069.4	11,042.9	11,041.7	35.0	23.2	-92.00	-1,943.9	-114.8	464.7	406.7	58.00	8.013		
12,464.0	11,069.0	11,042.5	11,041.4	36.1	23.2	-91.35	-1,943.9	-114.8	372.6	313.4	59.20	6.293		
12,559.0	11,068.6	11,042.2	11,041.0	37.4	23.2	-91.46	-1,943.9	-114.8	282.3	221.9	60.46	4.670		
12,653.0	11,068.5	11,042.1	11,041.0	38.7	23.2	-90.38	-1,943.9	-114.8	197.2	135.4	61.71	3.195		
12,749.0	11,069.2	11,042.8	11,041.7	40.0	23.2	-90.28	-1,943.9	-114.8	122.4	59.5	62.95	1.945		
12,830.3	11,070.1	11,043.6	11,042.5	41.1	23.2	-90.78	-1,943.9	-114.8	93.1	29.1	63.98	1.455 Level 3, CC, ES, SF		
12,842.0	11,070.2	11,043.8	11,042.6	41.3	23.2	-90.85	-1,943.9	-114.8	93.8	29.6	64.13	1.462 Level 3		
12,937.0	11,070.5	11,044.0	11,042.9	42.7	23.2	-90.50	-1,943.9	-114.8	140.3	74.9	65.40	2.146		
13,032.0	11,070.1	11,043.5	11,042.4	44.1	23.2	-90.04	-1,943.9	-114.8	220.0	153.1	66.84	3.291		
13,127.0	11,069.3	11,042.6	11,041.5	45.6	23.2	-88.45	-1,943.9	-114.8	308.4	240.1	68.26	4.517		
13,222.0	11,068.5	11,041.8	11,040.6	47.0	23.2	-89.74	-1,943.9	-114.8	399.7	330.0	69.70	5.735		
13,317.0	11,067.8	11,040.9	11,039.8	48.4	23.2	-87.05	-1,943.9	-114.8	492.4	421.4	71.02	6.933		
13,411.0	11,066.7	11,039.7	11,038.6	49.9	23.2	-86.82	-1,943.9	-114.8	584.8	512.3	72.47	8.070		
13,506.0	11,065.6	11,038.6	11,037.4	51.3	23.2	-85.76	-1,943.9	-114.8	678.6	604.8	73.78	9.197		
13,601.0	11,064.3	11,037.1	11,036.0	52.8	23.2	-83.73	-1,943.9	-114.7	772.6	697.6	75.07	10.292		
13,697.0	11,063.0	11,035.8	11,034.6	54.3	23.2	-85.23	-1,943.9	-114.7	867.8	791.1	76.76	11.306		
13,792.0	11,062.4	11,035.0	11,033.9	55.8	23.2	-88.25	-1,943.9	-114.7	962.2	883.8	78.45	12.266		
13,887.0	11,062.3	11,034.8	11,033.7	57.2	23.2	-91.12	-1,943.9	-114.7	1,056.8	976.8	79.95	13.217		
13,981.0	11,062.5	11,034.9	11,033.7	58.7	23.2	-91.33	-1,943.9	-114.7	1,150.4	1,068.9	81.48	14.119		
14,076.0	11,061.9	11,034.2	11,033.1	60.2	23.2	-78.93	-1,943.9	-114.7	1,245.1	1,163.5	81.63	15.254		
14,170.0	11,060.9	11,033.1	11,032.0	61.7	23.2	-83.43	-1,943.9	-114.7	1,338.9	1,254.9	84.02	15.937		
14,265.0	11,059.5	11,031.6	11,030.5	63.3	23.2	-72.15	-1,943.9	-114.7	1,433.7	1,351.2	82.49	17.381		
14,360.0	11,057.3	11,029.4	11,028.2	64.8	23.2	-70.07	-1,943.9	-114.6	1,528.5	1,445.3	83.16	18.380		
14,455.0	11,055.9	11,027.8	11,026.7	66.3	23.2	-84.59	-1,943.9	-114.6	1,623.2	1,534.6	88.62	18.316		
14,549.0	11,055.2	11,027.0	11,025.9	67.9	23.2	-83.03	-1,943.9	-114.6	1,717.0	1,627.0	89.93	19.091		
14,644.0	11,055.2	11,026.9	11,025.7	69.5	23.2	-96.64	-1,943.9	-114.6	1,811.7	1,720.0	91.71	19.754		

30-025-41641



Job Number: SVM0-141489
 Company: Yates Petroleum Corporation
 Lease/Well: Caravan State Unit 9H
 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\MOICARAVA~1\9H.SVY
 Date/Time: 06-Nov-14 / 16:51
 Curve Name: Surface - 1200' M.D. (Rate Gyro)

HOBBES OGD

MAR 05 2015

RECEIVED

MS SURVEY

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 179.61
 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.
 Travis Pack 11/6/14
 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 Distance FT	Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.56	356.98	100.00	.49	-.03	-.49	.49	356.98	.56
200.00	.25	137.53	200.00	.82	.10	-.81	.82	6.71	.77
300.00	.19	90.63	300.00	.65	.41	-.65	.77	32.08	.18
400.00	.14	290.45	400.00	.69	.46	-.69	.83	33.58	.33
500.00	.22	100.45	500.00	.70	.53	-.70	.88	37.33	.36
600.00	.21	215.86	600.00	.52	.62	-.51	.80	49.95	.36
700.00	.21	66.60	700.00	.44	.68	-.44	.81	56.86	.40
800.00	.31	359.45	799.99	.79	.84	-.78	1.15	47.01	.30
900.00	.21	328.61	899.99	1.21	.74	-1.21	1.42	31.55	.17

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	.29	270.72	999.99	1.37	.40	-1.37	1.43	16.10	.25
1100.00	.25	246.42	1099.99	1.29	-.06	-1.29	1.29	357.46	.12
Last Survey Depth Recorded									
1200.00	.54	270.52	1199.99	1.20	-.73	-1.21	1.41	328.85	.33