



15- 40426

Yates Petroleum

Eddy, NM (NAD-83)
Antweil ANU Federal
#4H

OH

Design: OH

Survey Report - Geographic

30 July, 2013





Survey Report - Geographic



Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #4H
Project:	Eddy, NM (NAD:83)	TVD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Site:	Antwell ANU Federal	MD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Well:	#4H	North Reference:	Gnd
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Project:	Eddy, 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:	Antwell ANU Federal				
Site Position:		Northing:	591,821.68 usft	Latitude:	32° 37' 35.497 N
From:	Map	Easting:	643,773.52 usft	Longitude:	104° 0' 2.161 W
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.18 °

Well	#4H					
Well Position	+N/-S	0.0 usft	Northing:	591,821.68 usft	Latitude:	32° 37' 35.497 N
	+E/-W	0.0 usft	Easting:	643,773.52 usft	Longitude:	104° 0' 2.161 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,335.0 usft

Wellbore		OH			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/3/2013	7.57	60.44	48,615

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	91.61	

Survey Program		Date	7/30/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	3,700.0	Survey #1 - MS1 (OH)	CB-GYRO-MS	Camera based gyro multishot	
3,876.0	14,981.0	Survey #2 - MWD1 (OH)	MWD	MWD - Standard	
15,035.2	15,035.2	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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	591,821.68	643,773.52	32° 37' 35.497 N	104° 0' 2.161 W
100.0	0.55	166.52	100.0	-0.5	0.1	591,821.22	643,773.63	32° 37' 35.492 N	104° 0' 2.159 W
200.0	0.71	171.70	200.0	-1.5	0.3	591,820.14	643,773.83	32° 37' 35.481 N	104° 0' 2.157 W
300.0	0.82	169.89	300.0	-2.9	0.5	591,818.82	643,774.05	32° 37' 35.468 N	104° 0' 2.155 W
400.0	0.90	175.89	400.0	-4.4	0.7	591,817.33	643,774.23	32° 37' 35.454 N	104° 0' 2.153 W
500.0	0.73	167.51	500.0	-5.8	0.9	591,815.93	643,774.42	32° 37' 35.440 N	104° 0' 2.150 W
600.0	0.81	155.15	600.0	-7.0	1.3	591,814.66	643,774.86	32° 37' 35.427 N	104° 0' 2.145 W
700.0	0.76	142.49	699.9	-8.2	2.0	591,813.50	643,775.56	32° 37' 35.416 N	104° 0' 2.137 W
800.0	0.98	117.96	799.9	-9.1	3.2	591,812.57	643,776.72	32° 37' 35.406 N	104° 0' 2.124 W
900.0	1.17	101.82	899.9	-9.7	5.0	591,811.96	643,778.47	32° 37' 35.400 N	104° 0' 2.103 W



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Site:	Antwell ANU Federal	MD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Well:	#4H	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	1.42	102.70	999.9	-10.2	7.2	591,811.48	643,780.68	32° 37' 35.396 N	104° 0' 2.077 W
1,100.0	1.60	92.99	1,099.9	-10.6	9.8	591,811.13	643,783.29	32° 37' 35.392 N	104° 0' 2.047 W
1,200.0	2.03	88.65	1,199.8	-10.6	12.9	591,811.10	643,786.45	32° 37' 35.392 N	104° 0' 2.010 W
1,300.0	2.00	88.77	1,299.7	-10.5	16.4	591,811.18	643,789.97	32° 37' 35.392 N	104° 0' 1.969 W
1,400.0	1.95	84.17	1,399.7	-10.3	19.9	591,811.39	643,793.40	32° 37' 35.394 N	104° 0' 1.929 W
1,500.0	1.51	81.30	1,499.6	-9.9	22.9	591,811.76	643,796.40	32° 37' 35.398 N	104° 0' 1.894 W
1,600.0	0.85	71.84	1,599.6	-9.5	24.9	591,812.19	643,798.40	32° 37' 35.402 N	104° 0' 1.870 W
1,700.0	0.80	63.34	1,699.6	-8.9	26.2	591,812.74	643,799.73	32° 37' 35.407 N	104° 0' 1.855 W
1,800.0	0.62	75.02	1,799.6	-8.5	27.4	591,813.19	643,800.88	32° 37' 35.412 N	104° 0' 1.841 W
1,900.0	0.62	64.07	1,899.6	-8.1	28.4	591,813.57	643,801.89	32° 37' 35.416 N	104° 0' 1.829 W
2,000.0	1.06	56.39	1,999.6	-7.4	29.6	591,814.32	643,803.15	32° 37' 35.423 N	104° 0' 1.815 W
2,100.0	1.33	53.99	2,099.6	-6.2	31.3	591,815.51	643,804.86	32° 37' 35.435 N	104° 0' 1.795 W
2,200.0	1.52	52.02	2,199.5	-4.7	33.3	591,817.01	643,806.84	32° 37' 35.449 N	104° 0' 1.771 W
2,300.0	1.65	55.26	2,299.5	-3.0	35.5	591,818.65	643,809.07	32° 37' 35.466 N	104° 0' 1.745 W
2,400.0	1.66	51.39	2,399.4	-1.3	37.9	591,820.37	643,811.38	32° 37' 35.483 N	104° 0' 1.718 W
2,500.0	1.72	52.25	2,499.4	0.5	40.2	591,822.19	643,813.70	32° 37' 35.501 N	104° 0' 1.691 W
2,600.0	1.56	46.80	2,599.4	2.4	42.4	591,824.04	643,815.88	32° 37' 35.519 N	104° 0' 1.665 W
2,700.0	1.57	42.86	2,699.3	4.3	44.3	591,825.98	643,817.80	32° 37' 35.538 N	104° 0' 1.643 W
2,800.0	1.64	44.32	2,799.3	6.3	46.2	591,828.01	643,819.74	32° 37' 35.558 N	104° 0' 1.620 W
2,900.0	1.45	46.12	2,899.3	8.2	48.1	591,829.91	643,821.65	32° 37' 35.577 N	104° 0' 1.598 W
3,000.0	1.52	45.72	2,999.2	10.0	50.0	591,831.71	643,823.51	32° 37' 35.594 N	104° 0' 1.576 W
3,100.0	1.36	51.11	3,099.2	11.7	51.9	591,833.38	643,825.38	32° 37' 35.611 N	104° 0' 1.554 W
3,200.0	1.35	51.82	3,199.2	13.2	53.7	591,834.85	643,827.23	32° 37' 35.625 N	104° 0' 1.532 W
3,300.0	1.36	62.67	3,299.1	14.4	55.7	591,836.13	643,829.21	32° 37' 35.638 N	104° 0' 1.509 W
3,400.0	1.25	63.27	3,399.1	15.5	57.7	591,837.16	643,831.24	32° 37' 35.648 N	104° 0' 1.485 W
3,500.0	1.51	69.14	3,499.1	16.4	59.9	591,838.12	643,833.45	32° 37' 35.658 N	104° 0' 1.459 W
3,600.0	1.40	76.78	3,599.0	17.2	62.3	591,838.87	643,835.87	32° 37' 35.665 N	104° 0' 1.431 W
3,700.0	1.47	70.28	3,699.0	17.9	64.7	591,839.58	643,838.26	32° 37' 35.672 N	104° 0' 1.403 W
Tie into Gyro @ 3700' MD									
3,876.0	1.10	38.20	3,875.0	20.0	67.9	591,841.67	643,841.43	32° 37' 35.692 N	104° 0' 1.366 W
3,970.0	1.20	51.50	3,969.0	21.3	69.2	591,842.99	643,842.76	32° 37' 35.706 N	104° 0' 1.350 W
4,157.0	1.20	57.30	4,155.9	23.6	72.4	591,845.27	643,845.94	32° 37' 35.728 N	104° 0' 1.313 W
4,342.0	1.20	59.60	4,340.9	25.6	75.7	591,847.30	643,849.24	32° 37' 35.748 N	104° 0' 1.274 W
4,529.0	1.60	69.40	4,527.8	27.5	79.9	591,849.21	643,853.38	32° 37' 35.767 N	104° 0' 1.226 W
4,716.0	1.80	70.80	4,714.7	29.4	85.1	591,851.09	643,858.59	32° 37' 35.785 N	104° 0' 1.165 W
4,903.0	1.60	72.30	4,901.6	31.2	90.3	591,852.85	643,863.85	32° 37' 35.802 N	104° 0' 1.103 W
5,090.0	0.70	64.00	5,088.6	32.5	93.8	591,854.15	643,867.37	32° 37' 35.815 N	104° 0' 1.062 W
5,277.0	0.40	200.60	5,275.6	32.4	94.6	591,854.04	643,868.16	32° 37' 35.814 N	104° 0' 1.053 W
5,463.0	0.50	200.00	5,461.6	31.0	94.1	591,852.67	643,867.66	32° 37' 35.800 N	104° 0' 1.059 W
5,650.0	0.50	182.30	5,648.6	29.4	93.8	591,851.08	643,867.35	32° 37' 35.785 N	104° 0' 1.062 W
5,836.0	0.20	192.50	5,834.6	28.3	93.7	591,849.96	643,867.24	32° 37' 35.774 N	104° 0' 1.064 W
6,023.0	0.40	205.00	6,021.6	27.4	93.4	591,849.05	643,866.90	32° 37' 35.765 N	104° 0' 1.068 W
6,209.0	0.40	195.30	6,207.6	26.1	92.9	591,847.83	643,866.45	32° 37' 35.753 N	104° 0' 1.073 W
6,397.0	0.90	182.60	6,395.6	24.0	92.7	591,845.72	643,866.21	32° 37' 35.732 N	104° 0' 1.076 W
6,584.0	1.80	219.60	6,582.5	20.3	90.8	591,841.99	643,864.27	32° 37' 35.695 N	104° 0' 1.099 W
6,772.0	1.20	203.70	6,770.5	16.2	88.1	591,837.92	643,861.60	32° 37' 35.655 N	104° 0' 1.130 W
6,958.0	0.50	295.00	6,956.4	14.8	86.6	591,836.47	643,860.08	32° 37' 35.640 N	104° 0' 1.148 W
7,145.0	0.50	299.40	7,143.4	15.5	85.1	591,837.22	643,858.63	32° 37' 35.648 N	104° 0' 1.165 W
7,332.0	0.40	127.10	7,330.4	15.5	84.9	591,837.23	643,858.44	32° 37' 35.648 N	104° 0' 1.167 W
7,518.0	0.50	122.70	7,516.4	14.7	86.1	591,836.40	643,859.64	32° 37' 35.640 N	104° 0' 1.153 W
7,706.0	0.90	136.60	7,704.4	13.2	87.8	591,834.88	643,861.35	32° 37' 35.625 N	104° 0' 1.133 W
7,874.0	1.90	147.70	7,872.4	9.9	90.2	591,831.57	643,863.74	32° 37' 35.592 N	104° 0' 1.105 W
7,882.0	1.90	150.80	7,880.4	9.7	90.4	591,831.34	643,863.88	32° 37' 35.590 N	104° 0' 1.104 W
KOP: 7882.0' MD; 7880.4' TVD, 1.90° INC, 90.0° VS									
7,912.0	2.10	137.50	7,910.3	8.8	91.0	591,830.50	643,864.49	32° 37' 35.581 N	104° 0' 1.097 W

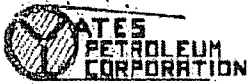


Survey Report - Geographic



Company:	Yates Petroleum	Local Co-ordinate/Reference:	Well #4H
Project:	Eddy NM (NAD 83)	TVD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Site:	Antwell ANU/Federal	MD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,943.0	4.80	107.60	7,941.3	8.0	92.6	591,829.69	643,866.11	32° 37' 35.573 N	104° 0' 1.078 W
7,974.0	8.80	97.40	7,972.1	7.3	96.2	591,828.99	643,869.70	32° 37' 35.566 N	104° 0' 1.036 W
8,006.0	13.50	92.30	8,003.4	6.8	102.3	591,828.53	643,875.86	32° 37' 35.561 N	104° 0' 0.964 W
8,037.0	18.10	90.20	8,033.3	6.7	110.8	591,828.36	643,884.30	32° 37' 35.559 N	104° 0' 0.865 W
8,068.0	21.80	88.20	8,062.4	6.8	121.4	591,828.53	643,894.87	32° 37' 35.561 N	104° 0' 0.741 W
8,099.0	25.30	87.00	8,090.8	7.4	133.7	591,829.06	643,907.24	32° 37' 35.566 N	104° 0' 0.597 W
8,130.0	28.30	87.00	8,118.5	8.1	147.7	591,829.79	643,921.20	32° 37' 35.572 N	104° 0' 0.434 W
8,161.0	31.00	88.10	8,145.4	8.8	163.0	591,830.44	643,936.52	32° 37' 35.578 N	104° 0' 0.254 W
8,192.0	34.30	88.80	8,171.5	9.2	179.7	591,830.88	643,953.24	32° 37' 35.582 N	104° 0' 0.059 W
8,223.0	37.70	89.10	8,196.6	9.5	197.9	591,831.22	643,971.45	32° 37' 35.585 N	103° 59' 59.846 W
8,254.0	40.80	89.30	8,220.6	9.8	217.5	591,831.49	643,991.06	32° 37' 35.587 N	103° 59' 59.617 W
8,285.0	44.70	89.70	8,243.4	10.0	238.6	591,831.67	644,012.10	32° 37' 35.588 N	103° 59' 59.371 W
8,317.0	48.20	90.20	8,265.4	10.0	261.8	591,831.69	644,035.29	32° 37' 35.588 N	103° 59' 59.099 W
8,348.0	52.10	90.50	8,285.3	9.9	285.6	591,831.54	644,059.08	32° 37' 35.585 N	103° 59' 58.821 W
8,379.0	55.40	91.10	8,303.6	9.5	310.6	591,831.19	644,084.08	32° 37' 35.581 N	103° 59' 58.529 W
8,411.0	58.10	91.60	8,321.1	8.9	337.3	591,830.56	644,110.83	32° 37' 35.574 N	103° 59' 58.216 W
8,442.0	59.60	92.30	8,337.2	8.0	363.8	591,829.65	644,137.34	32° 37' 35.564 N	103° 59' 57.906 W
8,473.0	62.80	92.80	8,352.1	6.8	391.0	591,828.44	644,164.48	32° 37' 35.552 N	103° 59' 57.589 W
8,507.0	66.70	91.20	8,366.6	5.7	421.7	591,827.38	644,195.20	32° 37' 35.540 N	103° 59' 57.230 W
8,539.0	70.90	91.10	8,378.2	5.1	451.5	591,826.78	644,225.02	32° 37' 35.533 N	103° 59' 56.881 W
8,570.0	73.90	91.40	8,387.5	4.4	481.0	591,826.13	644,254.56	32° 37' 35.526 N	103° 59' 56.536 W
8,601.0	77.10	91.90	8,395.3	3.6	511.0	591,825.27	644,284.56	32° 37' 35.516 N	103° 59' 56.185 W
8,632.0	80.10	92.60	8,401.4	2.4	541.4	591,824.07	644,314.92	32° 37' 35.504 N	103° 59' 55.830 W
8,663.0	81.50	92.80	8,406.4	0.9	572.0	591,822.63	644,345.49	32° 37' 35.488 N	103° 59' 55.472 W
8,695.0	83.00	93.30	8,410.7	-0.7	603.6	591,820.94	644,377.15	32° 37' 35.471 N	103° 59' 55.102 W
8,726.0	85.90	93.90	8,413.7	-2.7	634.4	591,819.01	644,407.94	32° 37' 35.451 N	103° 59' 54.742 W
8,757.0	86.90	94.10	8,415.6	-4.8	665.3	591,816.85	644,438.80	32° 37' 35.428 N	103° 59' 54.382 W
8,851.0	87.60	94.10	8,420.2	-11.5	758.9	591,810.14	644,532.45	32° 37' 35.359 N	103° 59' 53.287 W
EOC - 8851.0' MD: 8420.2' TVD: 87.60' INC: 759.0' VS									
8,944.0	87.40	94.60	8,424.2	-18.6	851.6	591,803.09	644,625.09	32° 37' 35.286 N	103° 59' 52.204 W
9,038.0	87.60	94.80	8,428.3	-26.3	945.2	591,795.39	644,718.69	32° 37' 35.207 N	103° 59' 51.109 W
9,132.0	87.80	94.60	8,432.1	-34.0	1,038.8	591,787.70	644,812.30	32° 37' 35.128 N	103° 59' 50.015 W
9,225.0	87.60	94.80	8,435.8	-41.6	1,131.4	591,780.08	644,904.91	32° 37' 35.050 N	103° 59' 48.932 W
9,318.0	88.20	94.20	8,439.2	-48.9	1,224.0	591,772.79	644,997.56	32° 37' 34.975 N	103° 59' 47.849 W
9,412.0	88.00	94.20	8,442.3	-55.8	1,317.7	591,765.91	645,091.26	32° 37' 34.904 N	103° 59' 46.754 W
9,506.0	88.70	93.50	8,445.0	-62.1	1,411.5	591,759.60	645,185.00	32° 37' 34.838 N	103° 59' 45.658 W
9,599.0	90.30	93.00	8,445.9	-67.4	1,504.3	591,754.33	645,277.85	32° 37' 34.783 N	103° 59' 44.573 W
9,693.0	90.30	93.20	8,445.4	-72.4	1,598.2	591,749.25	645,371.71	32° 37' 34.730 N	103° 59' 43.475 W
9,787.0	90.30	93.30	8,444.9	-77.8	1,692.0	591,743.92	645,465.56	32° 37' 34.674 N	103° 59' 42.378 W
9,880.0	90.40	92.10	8,444.3	-82.1	1,784.9	591,739.54	645,558.45	32° 37' 34.628 N	103° 59' 41.292 W
9,973.0	90.30	92.30	8,443.7	-85.7	1,877.9	591,735.97	645,651.38	32° 37' 34.590 N	103° 59' 40.205 W
10,066.0	90.40	91.20	8,443.2	-88.6	1,970.8	591,733.13	645,744.33	32° 37' 34.559 N	103° 59' 39.119 W
10,160.0	90.40	91.20	8,442.5	-90.5	2,064.8	591,731.16	645,838.31	32° 37' 34.536 N	103° 59' 38.020 W
10,253.0	90.10	91.80	8,442.1	-93.0	2,157.8	591,728.72	645,931.28	32° 37' 34.509 N	103° 59' 36.933 W
10,347.0	89.70	90.90	8,442.3	-95.2	2,251.7	591,726.51	646,025.25	32° 37' 34.484 N	103° 59' 35.834 W
10,441.0	89.60	91.40	8,442.8	-97.1	2,345.7	591,724.62	646,119.23	32° 37' 34.463 N	103° 59' 34.735 W
10,534.0	89.70	91.60	8,443.4	-99.5	2,438.7	591,722.19	646,212.19	32° 37' 34.436 N	103° 59' 33.648 W
10,627.0	89.60	93.20	8,444.0	-103.4	2,531.6	591,718.29	646,305.11	32° 37' 34.394 N	103° 59' 32.562 W
10,721.0	89.90	91.80	8,444.4	-107.5	2,625.5	591,714.19	646,399.02	32° 37' 34.351 N	103° 59' 31.464 W
10,813.0	90.30	91.90	8,444.2	-110.5	2,717.4	591,711.22	646,490.97	32° 37' 34.318 N	103° 59' 30.389 W
10,906.0	88.90	90.50	8,444.9	-112.4	2,810.4	591,709.28	646,583.94	32° 37' 34.296 N	103° 59' 29.302 W
11,000.0	88.90	90.70	8,446.7	-113.4	2,904.4	591,708.29	646,677.92	32° 37' 34.283 N	103° 59' 28.203 W
11,094.0	89.20	90.50	8,448.2	-114.4	2,998.4	591,707.31	646,771.90	32° 37' 34.271 N	103° 59' 27.104 W
11,187.0	89.40	90.90	8,449.4	-115.5	3,091.4	591,706.17	646,864.88	32° 37' 34.257 N	103° 59' 26.017 W
11,280.0	89.40	91.10	8,450.4	-117.1	3,184.3	591,704.55	646,957.87	32° 37' 34.238 N	103° 59' 24.929 W



Survey Report - Geographic



Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #4H
Project:	Eddy, NM (NAD-83)	TVD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5 KB)
Site:	Antwell ANU Federal	MD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5 KB)
Well:	#4H	North Reference:	Gnd
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	
11,373.0	89.90	91.40	8,450.9	-119.2	3,277.3	591,702.52	647,050.84	32° 37' 34.214 N	103° 59' 23.842 W	
11,466.0	90.10	91.90	8,450.9	-121.8	3,370.3	591,699.84	647,143.80	32° 37' 34.185 N	103° 59' 22.755 W	
11,560.0	90.40	91.90	8,450.5	-125.0	3,464.2	591,696.73	647,237.75	32° 37' 34.151 N	103° 59' 21.657 W	
11,653.0	89.00	91.40	8,451.0	-127.6	3,557.2	591,694.05	647,330.71	32° 37' 34.122 N	103° 59' 20.570 W	
11,746.0	89.00	91.10	8,452.6	-129.7	3,650.2	591,692.02	647,423.67	32° 37' 34.099 N	103° 59' 19.483 W	
11,840.0	89.00	91.40	8,454.3	-131.7	3,744.1	591,689.97	647,517.63	32° 37' 34.075 N	103° 59' 18.384 W	
11,933.0	88.70	91.60	8,456.1	-134.1	3,837.1	591,687.54	647,610.58	32° 37' 34.048 N	103° 59' 17.298 W	
12,026.0	88.70	91.60	8,458.2	-136.7	3,930.0	591,684.94	647,703.52	32° 37' 34.020 N	103° 59' 16.211 W	
12,096.0	88.90	90.40	8,459.7	-138.0	4,000.0	591,683.72	647,773.50	32° 37' 34.005 N	103° 59' 15.393 W	
12,189.0	89.00	90.00	8,461.4	-138.3	4,093.0	591,683.39	647,866.48	32° 37' 33.999 N	103° 59' 14.306 W	
12,282.0	88.90	90.00	8,463.1	-138.3	4,185.9	591,683.39	647,959.46	32° 37' 33.996 N	103° 59' 13.218 W	
12,376.0	89.20	90.40	8,464.7	-138.6	4,279.9	591,683.07	648,053.45	32° 37' 33.990 N	103° 59' 12.119 W	
12,470.0	89.40	90.70	8,465.8	-139.5	4,373.9	591,682.16	648,147.44	32° 37' 33.978 N	103° 59' 11.020 W	
12,563.0	89.20	90.90	8,467.0	-140.8	4,466.9	591,680.87	648,240.42	32° 37' 33.962 N	103° 59' 9.933 W	
12,656.0	89.00	90.70	8,468.4	-142.1	4,559.9	591,679.57	648,333.40	32° 37' 33.946 N	103° 59' 8.846 W	
12,749.0	88.20	90.20	8,470.7	-142.8	4,652.8	591,678.84	648,426.37	32° 37' 33.936 N	103° 59' 7.759 W	
12,843.0	88.20	90.40	8,473.6	-143.3	4,746.8	591,678.34	648,520.32	32° 37' 33.928 N	103° 59' 6.660 W	
12,937.0	88.70	91.10	8,476.2	-144.6	4,840.8	591,677.11	648,614.28	32° 37' 33.913 N	103° 59' 5.562 W	
13,030.0	89.20	91.20	8,477.9	-146.4	4,933.7	591,675.25	648,707.24	32° 37' 33.891 N	103° 59' 4.475 W	
13,123.0	89.40	91.10	8,479.0	-148.3	5,026.7	591,673.38	648,800.22	32° 37' 33.870 N	103° 59' 3.387 W	
13,217.0	89.00	90.90	8,480.3	-149.9	5,120.7	591,671.74	648,894.20	32° 37' 33.850 N	103° 59' 2.289 W	
13,310.0	89.90	90.70	8,481.2	-151.2	5,213.7	591,670.44	648,987.18	32° 37' 33.835 N	103° 59' 1.201 W	
13,403.0	90.10	90.20	8,481.2	-152.0	5,306.7	591,669.71	649,080.18	32° 37' 33.824 N	103° 59' 0.114 W	
13,497.0	89.90	90.50	8,481.2	-152.5	5,400.7	591,669.14	649,174.18	32° 37' 33.816 N	103° 58' 59.015 W	
13,590.0	89.60	90.00	8,481.6	-153.0	5,493.7	591,668.73	649,267.17	32° 37' 33.809 N	103° 58' 57.927 W	
13,683.0	88.90	90.90	8,482.9	-153.7	5,586.6	591,668.00	649,360.16	32° 37' 33.798 N	103° 58' 56.840 W	
13,777.0	88.70	91.40	8,484.8	-155.6	5,680.6	591,666.12	649,454.12	32° 37' 33.777 N	103° 58' 55.741 W	
13,870.0	89.40	91.40	8,486.4	-157.8	5,773.6	591,663.84	649,547.08	32° 37' 33.751 N	103° 58' 54.655 W	
13,964.0	89.20	91.80	8,487.5	-160.5	5,867.5	591,661.22	649,641.04	32° 37' 33.722 N	103° 58' 53.556 W	
14,081.0	90.10	93.90	8,488.2	-166.3	5,984.4	591,655.40	649,757.88	32° 37' 33.661 N	103° 58' 52.190 W	
14,175.0	89.60	94.60	8,488.5	-173.2	6,078.1	591,648.44	649,851.62	32° 37' 33.589 N	103° 58' 51.094 W	
14,268.0	89.40	93.70	8,489.3	-180.0	6,170.9	591,641.71	649,944.37	32° 37' 33.519 N	103° 58' 50.010 W	
14,361.0	88.70	92.80	8,490.8	-185.2	6,263.7	591,636.44	650,037.21	32° 37' 33.464 N	103° 58' 48.924 W	
14,455.0	88.00	91.20	8,493.5	-188.5	6,357.6	591,633.16	650,131.11	32° 37' 33.428 N	103° 58' 47.827 W	
14,548.0	89.00	91.40	8,496.0	-190.6	6,450.5	591,631.05	650,224.05	32° 37' 33.404 N	103° 58' 46.740 W	
14,642.0	90.30	90.90	8,496.5	-192.5	6,544.5	591,629.16	650,318.03	32° 37' 33.382 N	103° 58' 45.641 W	
14,736.0	89.90	91.80	8,496.4	-194.7	6,638.5	591,626.95	650,412.00	32° 37' 33.357 N	103° 58' 44.542 W	
14,829.0	90.30	90.20	8,496.2	-196.4	6,731.5	591,625.32	650,504.98	32° 37' 33.338 N	103° 58' 43.455 W	
14,923.0	90.10	90.40	8,495.9	-196.9	6,825.5	591,624.83	650,598.98	32° 37' 33.330 N	103° 58' 42.356 W	
14,981.0	89.90	90.20	8,495.9	-197.2	6,883.5	591,624.53	650,656.98	32° 37' 33.325 N	103° 58' 41.678 W	
15,035.2	89.90	90.20	8,496.0	-197.3	6,937.7	591,624.34	650,711.18	32° 37' 33.322 N	103° 58' 41.044 W	
BHL - 15035.2' MD, 8496.0' TVD, 89.90° INC, 90.20° AZI, -197.3° N, 6937.7' E, 6940.5' VS										

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
3,700.0	3,699.0	17.9	64.7	Tie into Gyro @ 3700' MD
7,882.0	7,880.4	9.7	90.4	KOP - 7882.0' MD, 7880.4' TVD, 1.90° INC, 90.0° VS
8,851.0	8,420.2	-11.5	758.9	EOC - 8851.0' MD, 8420.2' TVD, 87.60° INC, 759.0° VS
15,035.2	8,496.0	-197.3	6,937.7	BHL - 15035.2' MD, 8496.0' TVD, 89.90° INC, 90.20° AZI, -197.3° N, 6937.7' E, 6940.5' VS



Survey Report - Geographic



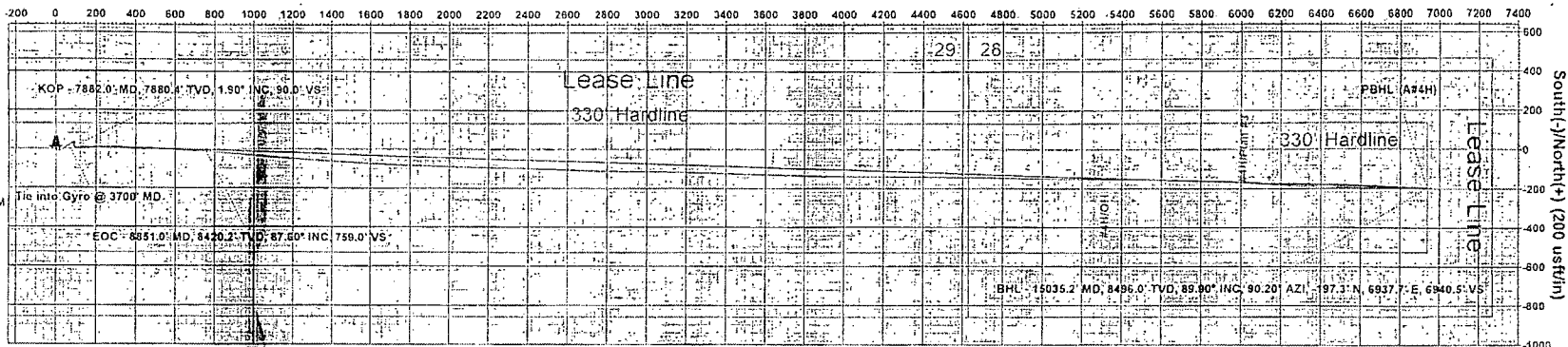
Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #4H
Project:	Eddy, NM (NAD-83)	TVD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Site:	Antwell ANU Federal	MD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Well:	#4H	North Reference:	Grid:
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Checked By: _____ Approved By: _____ Date: _____



Yates Petroleum
Project: Eddy, NM (NAD-83)
Site: Antwell ANU Federal
Well: #4H
Wellbore: OH
Plan: Plan #3 (#4H/OH)

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



WELL DETAILS: #4H

Ground Elevation:: 3335.0
RKB Elevation: WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Rig Name: Nomac #22 - 22.5' KB

Surface Hole Location
Northing Easting Latitude Longitude
591821.68 643773.52 32° 37' 35.497 N 104° 0' 2.161 W

DESIGN TARGET-DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL (A#4H)	8497.0	-195.0	6937.8	591626.70	650711.27

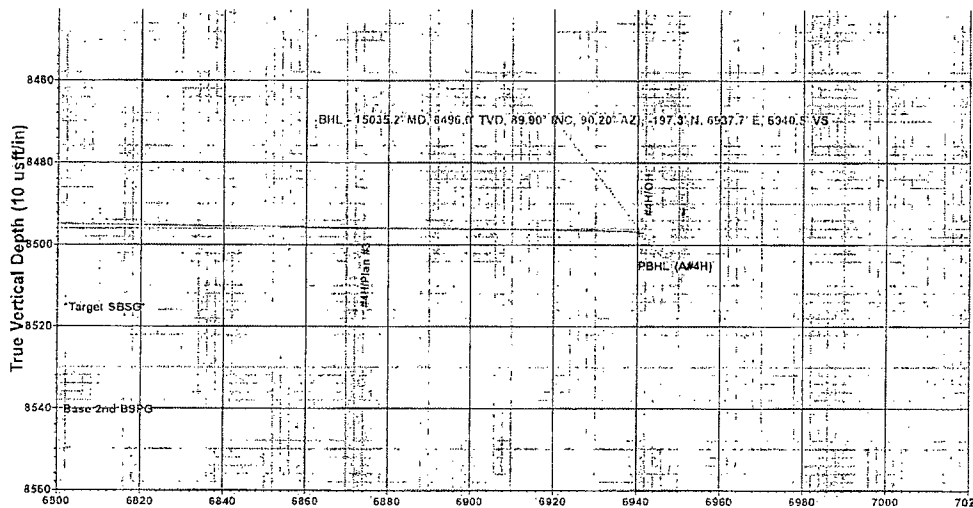


Azimuths to Grid North
True North: -0.18°
Magnetic North: 7.39°

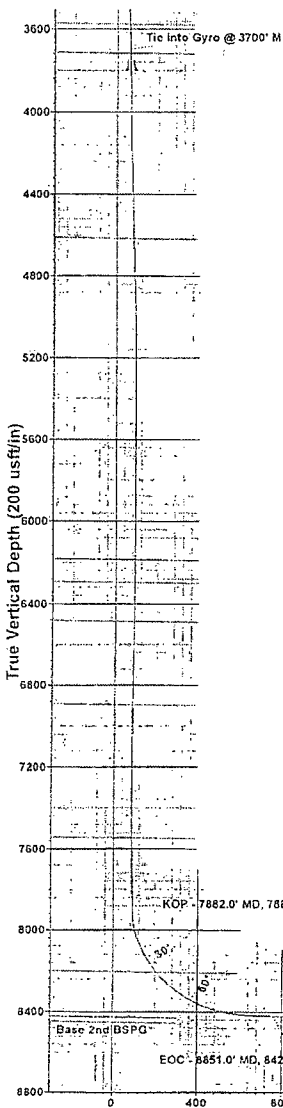
Magnetic Field
Strength: 48615.3nT
Dip Angle: 60.44°
Date: 6/3/2013
Model: IGRF2010

PROJECT DETAILS: Eddy, 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

Section Details										
Sec.	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	8507.0	66.70	91.20	8366.6	5.7	421.7	0.00	0.00	421.4	
2	8765.5	89.30	91.78	8420.0	-0.9	672.8	8.74	1.51	672.6	
3	15033.9	89.30	91.78	8496.6	-195.6	6937.7	0.00	0.00	6940.5	PBHL (A#4H)



Vertical Section at 91.61° (10 usft/in)



Vertical Section at 91.61° (200 usft/in)



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

Plan: Plan #3 (#4H/OH)
Created By: Matt Higgins Date: 12-03, July 30 2013



Job Number: SVMO-130478

Company: Yates Petroleum Corporation

Lease/Well: Antweil Anu Federal 4H

Location: Eddy County, NM

Rig Name: Nomac #22

RKB: 22'

G.L. or M.S.L.: GL

State/Country: New Mexico/USA

Declination: 7.21°

Grid: East To Grid North

File name: F:\SURVEY\2013SU~1\YATES\MO\ANTWEI~1\4H.SVY

Date/Time: 18-Jul-13 / 14:08

Curve Name: Surface - 3700' M.D. (Rate Gyro)

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 184.79
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

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	.55	166.52	100.00	-.47	.11	.46	.48	166.52	.55
200.00	.71	171.70	199.99	-1.55	.31	1.51	1.58	168.55	.17
300.00	.82	169.89	299.98	-2.86	.53	2.81	2.91	169.55	.11
400.00	.90	175.89	399.97	-4.35	.71	4.28	4.41	170.73	.12
500.00	.73	167.51	499.96	-5.76	.90	5.66	5.83	171.07	.21
600.00	.81	155.15	599.95	-7.02	1.34	6.88	7.15	169.20	.18
700.00	.76	142.49	699.94	-8.19	2.04	7.99	8.44	166.01	.18
800.00	.98	117.96	799.93	-9.12	3.20	8.82	9.66	160.66	.43
900.00	1.17	101.82	899.92	-9.73	4.95	9.28	10.91	153.01	.36

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	1.42	102.70	999.89	-10.21	7.16	9.57	12.47	144.94	.25
1100.00	1.60	92.99	1099.85	-10.55	9.76	9.70	14.38	137.22	.31
1200.00	2.03	88.65	1199.80	-10.58	12.93	9.47	16.71	129.30	.45
1300.00	2.00	88.77	1299.74	-10.50	16.44	9.09	19.51	122.57	.03
1400.00	1.95	84.17	1399.68	-10.29	19.88	8.60	22.39	117.37	.17
1500.00	1.51	81.30	1499.64	-9.92	22.88	7.98	24.94	113.45	.45
1600.00	.85	71.84	1599.62	-9.49	24.88	7.38	26.63	110.88	.69
1700.00	.80	63.34	1699.61	-8.95	26.21	6.73	27.70	108.84	.13
1800.00	.62	75.02	1799.60	-8.49	27.36	6.18	28.65	107.25	.23
1900.00	.62	64.07	1899.59	-8.12	28.37	5.72	29.51	105.97	.12
2000.00	1.06	56.39	1999.58	-7.37	29.63	4.87	30.53	103.97	.45
2100.00	1.33	53.99	2099.56	-6.17	31.33	3.54	31.94	101.15	.27
2200.00	1.52	52.02	2199.53	-4.68	33.32	1.88	33.65	97.99	.20
2300.00	1.65	55.26	2299.49	-3.04	35.55	.06	35.68	94.89	.16
2400.00	1.66	51.39	2399.45	-1.31	37.86	-1.85	37.89	91.99	.11
2500.00	1.72	52.25	2499.40	.51	40.18	-3.86	40.18	89.28	.07
2600.00	1.56	46.80	2599.36	2.36	42.36	-5.89	42.43	86.81	.22
2700.00	1.57	42.86	2699.33	4.29	44.28	-7.98	44.49	84.46	.11
2800.00	1.64	44.32	2799.29	6.32	46.22	-10.16	46.65	82.21	.08
2900.00	1.45	46.12	2899.25	8.22	48.13	-12.21	48.82	80.30	.20
3000.00	1.52	45.72	2999.22	10.03	49.99	-14.17	50.98	78.66	.07
3100.00	1.36	51.11	3099.19	11.70	51.86	-15.99	53.16	77.29	.21
3200.00	1.35	51.82	3199.16	13.17	53.71	-17.61	55.30	76.22	.02
3300.00	1.36	62.67	3299.13	14.44	55.69	-19.04	57.53	75.46	.26
3400.00	1.25	63.27	3399.10	15.48	57.72	-20.24	59.76	74.99	.11
3500.00	1.51	69.14	3499.08	16.44	59.93	-21.39	62.14	74.66	.30
3600.00	1.40	76.78	3599.04	17.19	62.35	-22.33	64.67	74.59	.22
Last Survey Depth Recorded									
3700.00	1.47	70.28	3699.01	17.90	64.74	-23.24	67.17	74.55	.18