



15-40426

Yates Petroleum

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

OH

RECEIVED

Design: OH

NOV 20 2013
NMOCB-Artesia

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:	Antweil 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

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:		Antweil 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:	Antweil 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' 35.708 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



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Site:	Antweil 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
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:	Antweil 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
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



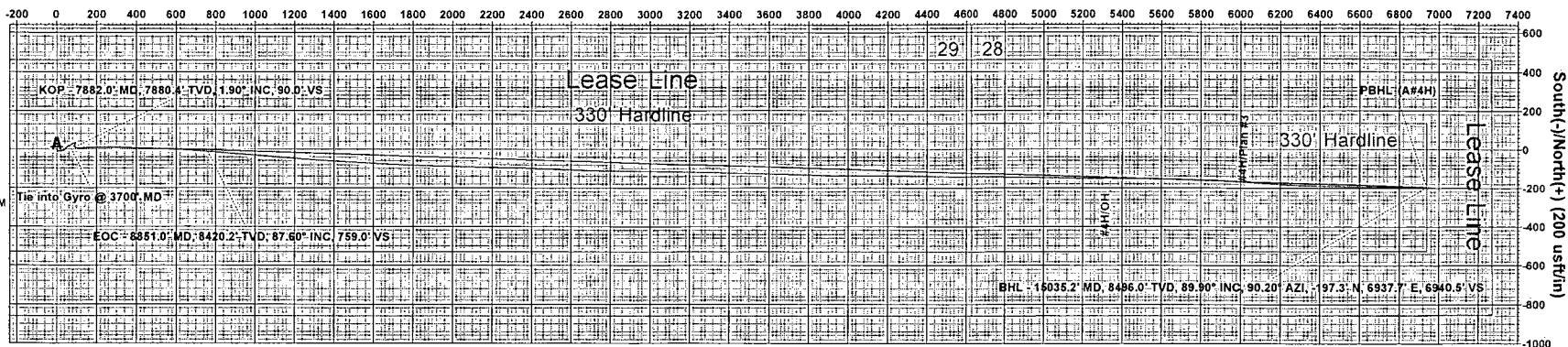
Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #4H
Project:	Eddy, NM (NAD-83)	TVD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Site:	Antweil ANU Federal	MD Reference:	WELL @ 3356.5usft (Nomac #22 - 22.5' KB)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum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

Checked By: _____ Approved By: _____ Date: _____



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

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



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)

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

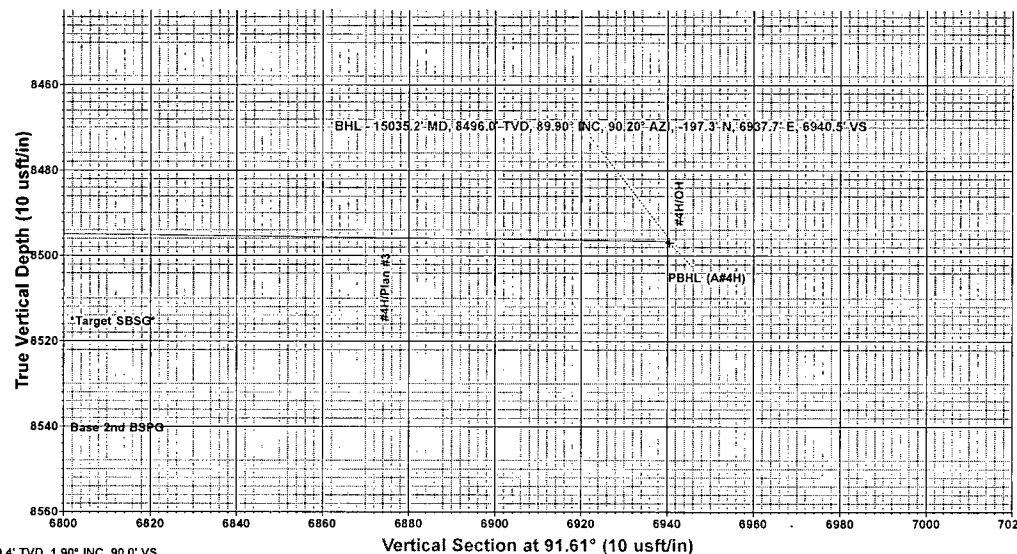
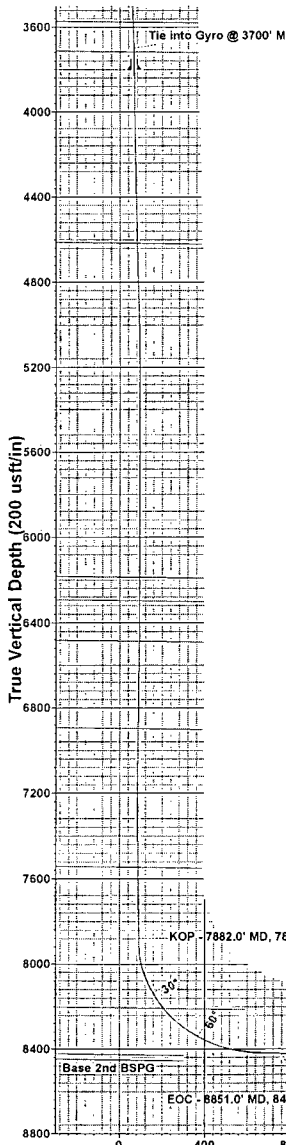
Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL (A#4H)	8497.0	-195.0	6937.8	591626.70	650711.27



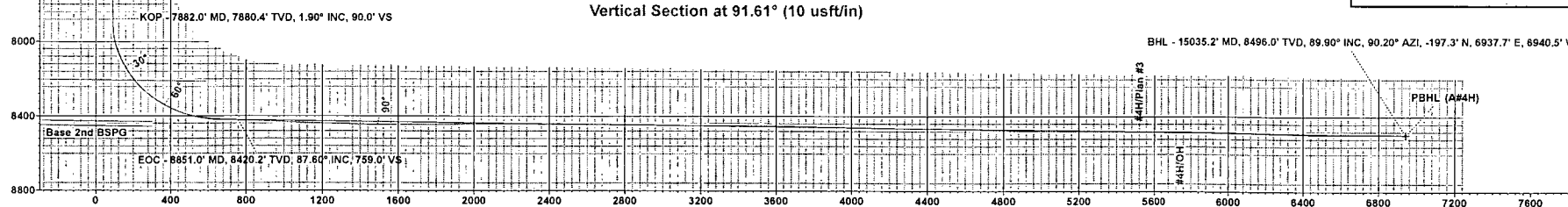
Azimuths to Grid North
True North: -0.18°
Magnetic North: 7.39°

Magnetic Field
Strength: 48615.3snT
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



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