

Results of Directional Survey

API number:	30-025-41054		
OGRID:		Operator:	YATES PETROLEUM CORPORATION
		Property:	YARROW BHY STATE # 4H

surface	ULSTR:	B	32	T	23S	R	33E
				475	FNL	2043	FEL

BH Loc	ULSTR:	O	32	T	23S	R	33E
15394	MD	11156.2	TVD	331	FSL	1951	FEL
				4949	FNL		

Top Perf/OH	ULSTR:	B	32	T	23S	R	33E
11623	MD	11186.0	TVD	1181	FNL	2035	FEL

Bot Perf/OH	ULSTR:	O	32	T	23S	R	33E
15322	MD	11156.1	TVD	403	FSL	1952	FEL
				4877	FNL		

	MD	N/S	E/W	VD
	11554	-636.60	8.70	11183.9
TOP PERFS/OH	11623	-705.60	7.81	11185.98
	11647	-729.60	7.50	11186.70
	15292	-4372.40	90.90	11156.00
BOT PERFS/OH	15322	-4402.40	91.28	11156.06
	15339	-4419.40	91.50	11156.10

NEXT TO LAST	15339	-4419.40	91.50	11156.10
LAST READING	15394.8	-4475.20	92.10	11156.20
TD	15394	-4474.40	92.09	11156.20

Surface Location	475	FN	2043	FE
Projected BHL	4949	FN	1951	FE
Location of				
Top Perfs/OH	1181	FN	2035	FE
Bottom Perfs/OH	4877	FN	1952	FE

SUMMARY of Subsurface Locations

Surface Location	B-32-23S-33E	475	FN	2043	FE	Vert. Depth
Top Perfs/OH	B-32-23S-33E	1181	FN	2035	FE	11185.98
Bottom Perfs/OH	O-32-23S-33E	4877	FN	1952	FE	11156.06
Projected TD	O-32-23S-33E	4949	FN	1951	FE	11156.20

APR 28 2014



3335 Pollok Drive
Conroe, Texas 77303

936.442.2500 (office)
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Surveyor Certification Form

Survey Company: MS ENERGY SERVICES
Surveyors Name: JARED MAYERS
Survey Job Type: SRG
Customer: YATES PETROLEUM CORPORATION
Well: YARROW BHY STATE 4H
API: 30-025-41054
Surveyed from: SURFACE TO A DEPTH OF 10630' M.D.
Survey Run Date: 12-26-13
Surface Location: LEA COUNTY, NM

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I certify that the data is true, correct, and complete and within the limitations of the tool set forth by MS Energy Services; that I am authorized and qualified to make this report; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by MS Energy Services.

Jared Mayers

Digitally signed by Jared Mayers
DN: cn=Jared Mayers, o=MS Energy Services, ou=MS
Survey, email=jamayers@msenergyservices.com, c=US
Date: 2013.01.02 15:46:01 -06'00'



Job Number: SVMO-131145
 Company: Yates Petroleum Corporation
 Lease/Well: Yarrow BHY State 4H
 Location: Lea County, NM
 Rig Name: Nomac #22
 RKB: 21.5'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 6.91°
 Grid: East To Grid North
 File name: S:\2013SU-1\YATES\MO\YARROW-1\4H.SVY
 Date/Time: 27-Dec-13 / 09:30
 Curve Name: Surface - 10630' M.D. (SRG)

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WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 178.74
 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	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
200.00	.17	198.82	200.00	-.28	-.10	.28	.30	198.82	.08
400.00	.09	182.78	400.00	-.72	-.20	.71	.75	195.48	.04
600.00	.13	166.75	600.00	-1.10	-.15	1.09	1.11	188.03	.03
800.00	.16	197.24	800.00	-1.58	-.19	1.58	1.59	186.68	.04
1000.00	.15	201.13	1000.00	-2.09	-.36	2.09	2.13	189.82	.01
1200.00	.61	220.26	1199.99	-3.15	-1.14	3.13	3.35	199.97	.24
1400.00	1.00	191.36	1399.97	-5.67	-2.18	5.63	6.08	200.99	.28
1600.00	.91	196.03	1599.95	-8.91	-2.96	8.85	9.39	198.37	.06
1800.00	1.38	198.98	1799.90	-12.72	-4.18	12.62	13.39	198.20	.24

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
2000.00	1.82	203.39	1999.83	-17.91	-6.23	17.77	18.96	199.17	.23
2200.00	.62	127.01	2199.79	-21.48	-6.62	21.32	22.47	197.14	.89
2400.00	1.17	85.77	2399.76	-21.98	-3.72	21.89	22.29	189.61	.41
2600.00	1.28	78.03	2599.72	-21.36	.50	21.37	21.37	178.66	.10
2800.00	2.18	73.88	2799.62	-19.84	6.34	19.98	20.83	162.28	.45
3000.00	1.68	22.58	2999.52	-16.08	11.12	16.32	19.55	145.33	.87
3200.00	2.15	21.03	3199.41	-9.87	13.59	10.17	16.80	125.99	.24
3400.00	1.57	310.83	3399.33	-4.58	12.87	4.86	13.66	109.58	1.10
3600.00	1.71	307.59	3599.25	-.97	8.43	1.15	8.48	96.53	.08
3800.00	2.26	313.74	3799.13	3.58	3.21	-3.51	4.81	41.90	.29
4000.00	1.20	166.46	3999.08	4.27	.85	-4.25	4.36	11.31	1.67
4200.00	2.04	161.23	4199.00	-1.13	2.49	1.19	2.74	114.49	.43
4400.00	3.19	148.66	4398.79	-9.26	6.53	9.40	11.33	144.80	.64
4600.00	1.42	58.73	4598.67	-12.73	11.54	12.98	17.18	137.79	1.74
4800.00	2.56	82.93	4798.55	-10.89	18.10	11.28	21.12	121.04	.70
5000.00	.75	55.28	4998.46	-9.59	23.60	10.11	25.48	112.12	.96
5200.00	.78	53.33	5198.44	-8.04	25.77	8.60	27.00	107.32	.02
5400.00	.97	37.95	5398.42	-5.89	27.91	6.50	28.52	101.91	.15
5600.00	.56	33.56	5598.40	-3.74	29.49	4.39	29.72	97.22	.21
5800.00	.76	38.24	5798.38	-1.88	30.85	2.56	30.91	93.49	.10
6000.00	.52	27.36	5998.37	-.03	32.09	.74	32.09	90.06	.13
6200.00	.54	15.03	6198.36	1.68	32.75	-.96	32.79	87.06	.06
6400.00	.65	14.97	6398.35	3.69	33.28	-2.96	33.49	83.68	.06
6600.00	.46	346.84	6598.34	5.57	33.40	-4.83	33.86	80.54	.16
6800.00	.37	340.89	6798.34	6.96	33.00	-6.23	33.73	78.09	.05
7000.00	.19	317.86	6998.34	7.81	32.57	-7.10	33.49	76.51	.10
7200.00	.31	261.42	7198.33	7.98	31.81	-7.28	32.80	75.92	.13
7400.00	.20	187.79	7398.33	7.55	31.23	-6.86	32.13	76.40	.16
7600.00	.81	166.41	7598.32	5.83	31.51	-5.14	32.05	79.51	.31

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
7800.00	.89	174.43	7798.30	2.91	32.00	-2.21	32.13	84.80	.07
8000.00	1.08	156.95	7998.27	-.37	32.88	1.09	32.89	90.64	.18
8200.00	1.11	184.54	8198.24	-4.03	33.47	4.77	33.71	96.87	.26
8400.00	1.06	213.67	8398.20	-7.50	32.29	8.21	33.15	103.08	.27
8600.00	1.33	234.80	8598.16	-10.38	29.37	11.02	31.15	109.47	.26
8800.00	1.24	238.75	8798.11	-12.84	25.62	13.40	28.66	116.62	.06
9000.00	.66	229.85	8998.08	-14.71	22.89	15.21	27.21	122.72	.30
9200.00	.98	242.89	9198.06	-16.23	20.49	16.68	26.14	128.39	.18
9400.00	.81	288.38	9398.04	-16.56	17.62	16.95	24.18	133.22	.35
9600.00	.94	224.54	9598.02	-17.29	15.13	17.62	22.97	138.81	.47
9800.00	2.36	180.59	9797.94	-22.57	13.94	22.88	26.53	148.31	.90
10000.00	2.27	178.91	9997.78	-30.65	13.97	30.95	33.69	155.50	.06
10200.00	2.20	204.25	10197.63	-38.11	12.47	38.38	40.10	161.88	.49
10400.00	1.63	202.95	10397.52	-44.23	9.78	44.44	45.30	167.53	.29
10600.00	1.00	207.58	10597.46	-48.40	7.87	48.56	49.03	170.77	.32

Last Survey Depth Recorded									
10630.00	.82	190.06	10627.46	-48.84	7.71	49.00	49.45	171.03	1.10

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Yates Petroleum

Lea County, NM (NAD-83)

Yarrow BHY State

4H

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

06 January, 2014

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well 4H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3688.5usft (Nomac 22)
Site:	Yarrow BHY State	MD Reference:	RKB @ 3688.5usft (Nomac 22)
Well:	4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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	Yarrow BHY State		
Site Position:	Northing:	461,710.24 usft	Latitude: 32° 16' 1.715 N
From: Map	Easting:	770,345.04 usft	Longitude: 103° 35' 32.725 W
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16 "	Grid Convergence:	0.40 °

Well:	4H		
Well Position	+N/-S	0.0 usft	Northing: 461,710.24 usft
	+E/-W	0.0 usft	Easting: 770,345.04 usft
Position Uncertainty 0.0 usft	Wellhead Elevation:	usft	Ground Level: 3,667.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	11/13/2013	7.30
			60.16
			48,397

Design	Wellbore #1		
Audit Notes:			
Version: 1.0	Phase: ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			171.03

Survey Program	Date 1/6/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
200.0	10,630.0	Gyros (Wellbore #1)	Good_gyro
10,653.0	15,394.8	Crescent MWD Surveys (Wellbore #1)	MWD
			Good Gyro
			MWD - Standard

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map	Latitude	Longitude
Depth	(°)	(°)	Depth	(usft)	(usft)	Northing	Easting		
(usft)			(usft)			(usft)	(usft)		
0.0	0.00	0.00	0.0	0.0	0.0	461,710.24	770,345.04	32° 16' 1.715 N	103° 35' 32.725 W
200.0	0.17	198.82	200.0	-0.3	-0.1	461,709.96	770,344.95	32° 16' 1.712 N	103° 35' 32.726 W
400.0	0.09	182.78	400.0	-0.7	-0.2	461,709.52	770,344.84	32° 16' 1.708 N	103° 35' 32.727 W
600.0	0.13	166.75	600.0	-1.1	-0.2	461,709.14	770,344.89	32° 16' 1.704 N	103° 35' 32.727 W
800.0	0.16	197.24	800.0	-1.6	-0.2	461,708.65	770,344.86	32° 16' 1.700 N	103° 35' 32.727 W
1,000.0	0.15	201.13	1,000.0	-2.1	-0.4	461,708.14	770,344.68	32° 16' 1.695 N	103° 35' 32.729 W
1,200.0	0.61	220.26	1,200.0	-3.2	-1.1	461,707.09	770,343.90	32° 16' 1.684 N	103° 35' 32.738 W
1,400.0	1.00	191.36	1,400.0	-5.7	-2.2	461,704.56	770,342.87	32° 16' 1.659 N	103° 35' 32.751 W
1,600.0	0.91	196.03	1,599.9	-8.9	-3.0	461,701.33	770,342.08	32° 16' 1.627 N	103° 35' 32.760 W
1,800.0	1.38	198.98	1,799.9	-12.7	-4.2	461,697.52	770,340.86	32° 16' 1.590 N	103° 35' 32.774 W
2,000.0	1.82	203.39	1,999.8	-17.9	-6.2	461,692.33	770,338.82	32° 16' 1.538 N	103° 35' 32.799 W

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well 4H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3688.5usft (Nomac 22)
Site:	Yarrow BHY State	MD Reference:	RKB @ 3688.5usft (Nomac 22)
Well:	4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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
2,200.0	0.62	127.01	2,199.8	-21.5	-6.6	461,688.76	770,338.42	32° 16' 1.503 N	103° 35' 32.804 W
2,400.0	1.17	85.77	2,399.8	-22.0	-3.7	461,688.26	770,341.32	32° 16' 1.498 N	103° 35' 32.770 W
2,600.0	1.28	78.03	2,599.7	-21.4	0.5	461,688.88	770,345.54	32° 16' 1.504 N	103° 35' 32.721 W
2,800.0	2.18	73.88	2,799.6	-19.8	6.3	461,690.40	770,351.38	32° 16' 1.518 N	103° 35' 32.653 W
3,000.0	1.68	22.58	2,999.5	-16.1	11.1	461,694.16	770,356.16	32° 16' 1.555 N	103° 35' 32.597 W
3,200.0	2.15	21.03	3,199.4	-9.9	13.6	461,700.37	770,358.63	32° 16' 1.617 N	103° 35' 32.567 W
3,400.0	1.57	310.83	3,399.3	-4.6	12.9	461,705.66	770,357.91	32° 16' 1.669 N	103° 35' 32.575 W
3,600.0	1.71	307.59	3,599.2	-1.0	8.4	461,709.27	770,353.47	32° 16' 1.705 N	103° 35' 32.627 W
3,800.0	2.26	313.74	3,799.1	3.6	3.2	461,713.82	770,348.26	32° 16' 1.750 N	103° 35' 32.687 W
4,000.0	1.20	166.46	3,999.1	4.3	0.9	461,714.51	770,345.90	32° 16' 1.757 N	103° 35' 32.714 W
4,200.0	2.04	161.23	4,199.0	-1.1	2.5	461,709.10	770,347.53	32° 16' 1.704 N	103° 35' 32.696 W
4,400.0	3.19	148.66	4,398.8	-9.3	6.5	461,700.98	770,351.57	32° 16' 1.623 N	103° 35' 32.649 W
4,600.0	1.42	58.73	4,598.7	-12.7	11.5	461,697.51	770,356.59	32° 16' 1.589 N	103° 35' 32.591 W
4,800.0	2.56	82.93	4,798.5	-10.9	18.1	461,699.35	770,363.14	32° 16' 1.606 N	103° 35' 32.515 W
5,000.0	0.75	55.28	4,998.5	-9.6	23.6	461,700.64	770,368.65	32° 16' 1.619 N	103° 35' 32.451 W
5,200.0	0.78	53.33	5,198.4	-8.0	25.8	461,702.20	770,370.81	32° 16' 1.634 N	103° 35' 32.425 W
5,400.0	0.97	37.95	5,398.4	-5.9	27.9	461,704.35	770,372.95	32° 16' 1.655 N	103° 35' 32.400 W
5,600.0	0.56	33.56	5,598.4	-3.7	29.5	461,706.50	770,374.53	32° 16' 1.676 N	103° 35' 32.382 W
5,800.0	0.76	38.24	5,798.4	-1.9	30.8	461,708.36	770,375.89	32° 16' 1.695 N	103° 35' 32.366 W
6,000.0	0.52	27.36	5,998.4	0.0	32.1	461,710.20	770,377.13	32° 16' 1.713 N	103° 35' 32.351 W
6,200.0	0.54	15.03	6,198.4	1.7	32.7	461,711.92	770,377.79	32° 16' 1.730 N	103° 35' 32.343 W
6,400.0	0.65	14.97	6,398.4	3.7	33.3	461,713.93	770,378.33	32° 16' 1.749 N	103° 35' 32.337 W
6,600.0	0.46	346.84	6,598.3	5.6	33.4	461,715.80	770,378.44	32° 16' 1.768 N	103° 35' 32.335 W
6,800.0	0.37	340.89	6,798.3	7.0	33.0	461,717.20	770,378.04	32° 16' 1.782 N	103° 35' 32.340 W
7,000.0	0.19	317.86	6,998.3	7.8	32.6	461,718.05	770,377.61	32° 16' 1.790 N	103° 35' 32.345 W
7,200.0	0.31	261.42	7,198.3	8.0	31.8	461,718.22	770,376.85	32° 16' 1.792 N	103° 35' 32.354 W
7,400.0	0.20	187.79	7,398.3	7.6	31.2	461,717.79	770,376.27	32° 16' 1.788 N	103° 35' 32.360 W
7,600.0	0.81	166.41	7,598.3	5.8	31.5	461,716.07	770,376.55	32° 16' 1.771 N	103° 35' 32.357 W
7,800.0	0.89	174.43	7,798.3	2.9	32.0	461,713.15	770,377.04	32° 16' 1.742 N	103° 35' 32.352 W
8,000.0	1.08	156.95	7,998.3	-0.4	32.9	461,709.87	770,377.93	32° 16' 1.709 N	103° 35' 32.342 W
8,200.0	1.11	184.54	8,198.2	-4.0	33.5	461,706.21	770,378.51	32° 16' 1.673 N	103° 35' 32.335 W
8,400.0	1.06	213.67	8,398.2	-7.5	32.3	461,702.73	770,377.33	32° 16' 1.639 N	103° 35' 32.349 W
8,600.0	1.33	234.80	8,598.2	-10.4	29.4	461,699.86	770,374.41	32° 16' 1.611 N	103° 35' 32.384 W
8,800.0	1.24	238.75	8,798.1	-12.8	25.6	461,697.40	770,370.66	32° 16' 1.586 N	103° 35' 32.427 W
9,000.0	0.66	229.85	8,998.1	-14.7	22.9	461,695.53	770,367.93	32° 16' 1.568 N	103° 35' 32.459 W
9,200.0	0.98	242.89	9,198.1	-16.2	20.5	461,694.01	770,365.53	32° 16' 1.553 N	103° 35' 32.487 W
9,400.0	0.81	288.38	9,398.0	-16.6	17.6	461,693.68	770,362.67	32° 16' 1.550 N	103° 35' 32.521 W
9,600.0	0.94	224.54	9,598.0	-17.3	15.1	461,692.95	770,360.17	32° 16' 1.543 N	103° 35' 32.550 W
9,800.0	2.36	180.59	9,797.9	-22.6	13.9	461,687.66	770,358.98	32° 16' 1.491 N	103° 35' 32.564 W
10,000.0	2.27	178.91	9,997.8	-30.7	14.0	461,679.59	770,359.01	32° 16' 1.411 N	103° 35' 32.565 W
10,200.0	2.20	204.25	10,197.6	-38.1	12.5	461,672.13	770,357.51	32° 16' 1.337 N	103° 35' 32.583 W
10,400.0	1.63	202.95	10,397.5	-44.2	9.8	461,666.01	770,354.83	32° 16' 1.277 N	103° 35' 32.614 W
10,600.0	1.00	207.58	10,597.5	-48.4	7.9	461,661.84	770,352.91	32° 16' 1.236 N	103° 35' 32.637 W
10,630.0	0.82	190.06	10,627.5	-48.8	7.7	461,661.40	770,352.75	32° 16' 1.231 N	103° 35' 32.639 W
10,653.0	0.50	173.60	10,650.5	-49.1	7.7	461,661.14	770,352.73	32° 16' 1.229 N	103° 35' 32.639 W
10,683.0	1.10	181.50	10,680.5	-49.5	7.7	461,660.72	770,352.74	32° 16' 1.225 N	103° 35' 32.639 W
KOP: 10683.0' MD									
10,715.0	3.70	192.40	10,712.4	-50.8	7.5	461,659.40	770,352.51	32° 16' 1.212 N	103° 35' 32.642 W
10,746.0	7.40	186.90	10,743.3	-53.8	7.0	461,656.44	770,352.05	32° 16' 1.182 N	103° 35' 32.647 W
10,777.0	10.40	177.90	10,773.9	-58.6	6.9	461,651.66	770,351.92	32° 16' 1.135 N	103° 35' 32.649 W
10,808.0	13.90	175.30	10,804.2	-65.1	7.3	461,645.15	770,352.32	32° 16' 1.071 N	103° 35' 32.645 W
10,839.0	17.90	175.70	10,834.0	-73.6	7.9	461,636.69	770,352.99	32° 16' 0.987 N	103° 35' 32.638 W
10,870.0	21.60	176.20	10,863.2	-84.0	8.7	461,626.24	770,353.72	32° 16' 0.883 N	103° 35' 32.630 W
10,902.0	25.30	177.10	10,892.5	-96.7	9.4	461,613.53	770,354.46	32° 16' 0.758 N	103° 35' 32.623 W
10,933.0	29.00	178.10	10,920.1	-110.8	10.0	461,599.40	770,355.04	32° 16' 0.618 N	103° 35' 32.617 W

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well 4H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3688.5usft (Nomac 22)
Site:	Yarrow BHY State	MD Reference:	RKB @ 3688.5usft (Nomac 22)
Well:	4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Houston R5000 Database

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,964.0	32.00	179.70	10,946.8	-126.6	10.3	461,583.67	770,355.34	32° 16' 0.462 N	103° 35' 32.615 W
10,995.0	36.10	180.20	10,972.5	-143.9	10.3	461,566.32	770,355.35	32° 16' 0.290 N	103° 35' 32.616 W
11,026.0	40.60	180.40	10,996.8	-163.1	10.2	461,547.09	770,355.25	32° 16' 0.100 N	103° 35' 32.619 W
11,057.0	43.80	180.20	11,019.8	-184.0	10.1	461,526.27	770,355.14	32° 15' 59.894 N	103° 35' 32.622 W
11,088.0	47.20	180.10	11,041.5	-206.1	10.0	461,504.16	770,355.08	32° 15' 59.675 N	103° 35' 32.624 W
11,119.0	50.90	179.90	11,061.8	-229.5	10.0	461,480.75	770,355.08	32° 15' 59.444 N	103° 35' 32.626 W
11,151.0	53.50	179.40	11,081.4	-254.8	10.2	461,455.47	770,355.24	32° 15' 59.194 N	103° 35' 32.627 W
11,182.0	56.80	179.20	11,099.1	-280.2	10.5	461,430.03	770,355.55	32° 15' 58.942 N	103° 35' 32.625 W
11,213.0	61.20	179.40	11,115.1	-306.8	10.8	461,403.47	770,355.87	32° 15' 58.679 N	103° 35' 32.623 W
11,244.0	64.20	179.70	11,129.3	-334.3	11.0	461,375.93	770,356.09	32° 15' 58.406 N	103° 35' 32.623 W
11,276.0	67.60	180.20	11,142.4	-363.5	11.1	461,346.72	770,356.11	32° 15' 58.117 N	103° 35' 32.625 W
11,307.0	71.40	180.80	11,153.2	-392.5	10.8	461,317.69	770,355.86	32° 15' 57.830 N	103° 35' 32.630 W
11,338.0	75.00	180.90	11,162.2	-422.2	10.4	461,288.02	770,355.42	32° 15' 57.537 N	103° 35' 32.638 W
11,368.0	78.70	180.80	11,169.0	-451.4	9.9	461,258.82	770,354.98	32° 15' 57.248 N	103° 35' 32.645 W
11,399.0	82.20	180.60	11,174.1	-482.0	9.6	461,228.25	770,354.61	32° 15' 56.945 N	103° 35' 32.652 W
11,430.0	85.00	180.20	11,177.6	-512.8	9.4	461,197.45	770,354.40	32° 15' 56.640 N	103° 35' 32.657 W
11,461.0	86.60	180.10	11,179.9	-543.7	9.3	461,166.54	770,354.31	32° 15' 56.335 N	103° 35' 32.660 W
11,493.0	87.40	180.40	11,181.5	-575.7	9.1	461,134.58	770,354.17	32° 15' 56.018 N	103° 35' 32.665 W
11,524.0	87.80	180.40	11,182.8	-606.6	8.9	461,103.61	770,353.96	32° 15' 55.712 N	103° 35' 32.670 W
11,554.0	88.30	180.60	11,183.9	-636.6	8.7	461,073.63	770,353.70	32° 15' 55.415 N	103° 35' 32.675 W
11,647.0	88.20	180.80	11,186.7	-729.6	7.5	460,980.68	770,352.56	32° 15' 54.496 N	103° 35' 32.696 W
11,740.0	90.40	180.90	11,187.8	-822.5	6.1	460,887.70	770,351.18	32° 15' 53.576 N	103° 35' 32.719 W
EOC: 11740.0' MD, 11187.8' TVD, 90.40° INC, 180.90° AZ, 813.4' VS									
11,834.0	90.80	180.20	11,186.9	-916.5	5.2	460,793.71	770,350.28	32° 15' 52.646 N	103° 35' 32.737 W
11,927.0	90.80	179.20	11,185.6	-1,009.5	5.7	460,700.72	770,350.77	32° 15' 51.726 N	103° 35' 32.739 W
12,020.0	91.30	177.90	11,183.9	-1,102.5	8.1	460,607.77	770,353.12	32° 15' 50.806 N	103° 35' 32.719 W
12,114.0	92.00	178.10	11,181.2	-1,196.4	11.4	460,513.87	770,356.40	32° 15' 49.876 N	103° 35' 32.689 W
12,207.0	90.40	178.10	11,179.2	-1,289.3	14.4	460,420.94	770,359.48	32° 15' 48.956 N	103° 35' 32.660 W
12,300.0	90.30	178.60	11,178.6	-1,382.3	17.1	460,327.98	770,362.16	32° 15' 48.036 N	103° 35' 32.637 W
12,393.0	90.40	178.80	11,178.1	-1,475.2	19.2	460,235.01	770,364.27	32° 15' 47.116 N	103° 35' 32.619 W
12,486.0	90.10	179.50	11,177.7	-1,568.2	20.6	460,142.02	770,365.65	32° 15' 46.196 N	103° 35' 32.611 W
12,580.0	90.10	179.00	11,177.5	-1,662.2	21.8	460,048.03	770,366.88	32° 15' 45.266 N	103° 35' 32.604 W
12,673.0	90.40	177.80	11,177.1	-1,755.2	24.4	459,955.07	770,369.48	32° 15' 44.346 N	103° 35' 32.581 W
12,767.0	89.20	177.80	11,177.4	-1,849.1	28.0	459,861.14	770,373.08	32° 15' 43.416 N	103° 35' 32.547 W
12,860.0	88.00	177.10	11,179.7	-1,942.0	32.2	459,768.26	770,377.22	32° 15' 42.497 N	103° 35' 32.506 W
12,954.0	89.00	177.20	11,182.2	-2,035.8	36.8	459,674.41	770,381.89	32° 15' 41.568 N	103° 35' 32.459 W
13,048.0	90.60	177.80	11,182.5	-2,129.7	40.9	459,580.50	770,385.99	32° 15' 40.638 N	103° 35' 32.419 W
13,141.0	89.20	177.40	11,182.6	-2,222.7	44.8	459,487.59	770,389.89	32° 15' 39.719 N	103° 35' 32.381 W
13,234.0	89.60	177.20	11,183.6	-2,315.5	49.2	459,394.70	770,394.27	32° 15' 38.799 N	103° 35' 32.338 W
13,328.0	89.00	177.80	11,184.8	-2,409.4	53.3	459,300.79	770,398.37	32° 15' 37.870 N	103° 35' 32.297 W
13,420.0	88.50	178.30	11,186.8	-2,501.4	56.5	459,208.87	770,401.50	32° 15' 36.960 N	103° 35' 32.268 W
13,514.0	91.80	179.00	11,186.5	-2,595.3	58.7	459,114.91	770,403.71	32° 15' 36.030 N	103° 35' 32.250 W
13,607.0	93.60	178.80	11,182.1	-2,688.2	60.5	459,022.03	770,405.49	32° 15' 35.111 N	103° 35' 32.237 W
13,700.0	93.30	179.20	11,176.5	-2,781.0	62.1	458,929.22	770,407.11	32° 15' 34.192 N	103° 35' 32.225 W
13,793.0	91.30	179.50	11,172.8	-2,873.9	63.1	458,836.30	770,408.17	32° 15' 33.273 N	103° 35' 32.221 W
13,887.0	90.30	179.70	11,171.5	-2,967.9	63.8	458,742.31	770,408.82	32° 15' 32.343 N	103° 35' 32.221 W
13,981.0	90.40	179.90	11,170.9	-3,061.9	64.1	458,648.32	770,409.15	32° 15' 31.413 N	103° 35' 32.224 W
14,074.0	90.30	179.70	11,170.4	-3,154.9	64.4	458,555.32	770,409.48	32° 15' 30.492 N	103° 35' 32.228 W
14,168.0	90.40	178.60	11,169.8	-3,248.9	65.8	458,461.33	770,410.87	32° 15' 29.562 N	103° 35' 32.219 W
14,261.0	91.70	179.40	11,168.1	-3,341.9	67.5	458,368.36	770,412.49	32° 15' 28.642 N	103° 35' 32.208 W
14,354.0	92.20	179.90	11,164.9	-3,434.8	68.0	458,275.42	770,413.06	32° 15' 27.722 N	103° 35' 32.209 W
14,448.0	91.50	178.80	11,161.9	-3,528.8	69.1	458,181.48	770,414.13	32° 15' 26.793 N	103° 35' 32.204 W
14,542.0	91.80	178.50	11,159.2	-3,622.7	71.3	458,087.54	770,416.34	32° 15' 25.863 N	103° 35' 32.186 W
14,635.0	91.10	179.40	11,156.8	-3,715.6	73.0	457,994.59	770,418.05	32° 15' 24.943 N	103° 35' 32.173 W
14,729.0	90.10	178.10	11,155.8	-3,809.6	75.1	457,900.62	770,420.10	32° 15' 24.013 N	103° 35' 32.157 W

Survey Report - Geographic

Company:	Yates Petroleum	Local Co-ordinate Reference:	Well 4H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3688.5usft (Nomac 22)
Site:	Yarrow BHY State	MD Reference:	RKB @ 3688.5usft (Nomac 22)
Well:	4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Houston R5000 Database

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,823.0	90.10	177.80	11,155.7	-3,903.6	78.4	457,806.68	770,423.46	32° 15' 23.084 N	103° 35' 32.125 W
14,917.0	89.90	177.90	11,155.7	-3,997.5	81.9	457,712.75	770,426.98	32° 15' 22.154 N	103° 35' 32.092 W
15,011.0	89.90	178.30	11,155.8	-4,091.4	85.1	457,618.80	770,430.10	32° 15' 21.224 N	103° 35' 32.063 W
15,104.0	90.10	178.80	11,155.8	-4,184.4	87.4	457,525.83	770,432.45	32° 15' 20.304 N	103° 35' 32.043 W
15,198.0	89.90	179.00	11,155.8	-4,278.4	89.2	457,431.85	770,434.26	32° 15' 19.374 N	103° 35' 32.030 W
15,292.0	89.90	179.00	11,156.0	-4,372.4	90.9	457,337.86	770,435.90	32° 15' 18.444 N	103° 35' 32.018 W
15,339.0	89.90	179.40	11,156.1	-4,419.4	91.5	457,290.87	770,436.56	32° 15' 17.979 N	103° 35' 32.014 W
Last MWD Survey: 15339.0' MD / 11156.1' TVD									
15,394.8	89.90	179.40	11,156.2	-4,475.2	92.1	457,235.08	770,437.14	32° 15' 17.426 N	103° 35' 32.012 W
Northing: 457235.07 / Easting: 770437.14 - BHL: 15394.8' MD, 11156.2' TVD, 89.90° INC, 179.40° AZ, -4475.2' +N/-S, 92.1' +E/-W, 4434.8' VS									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
10,683.0	10,680.5	-49.5	7.7	KOP: 10683.0' MD	
11,740.0	11,187.8	-822.5	6.1	EOC: 11740.0' MD, 11187.8' TVD, 90.40° INC, 180.90° AZ, 813.4' VS	
15,339.0	11,156.1	-4,419.4	91.5	Last MWD Survey: 15339.0' MD / 11156.1' TVD	
15,394.8	11,156.2	-4,475.2	92.1	Northing: 457235.07 / Easting: 770437.14	
15,394.8	11,156.2	-4,475.2	92.1	BHL: 15394.8' MD, 11156.2' TVD, 89.90° INC, 179.40° AZ, -4475.2' +N/-S, 92.1	

Checked By: _____ Approved By: _____ Date: _____