



NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 05 2017

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Matador Resources

Eddy County, New Mexico (NAD 27)

Guitar 10-24S-28E RB

#221H

Wellbore #1

Design: Surveys

Standard Survey Report

23 February, 2017



MS Energy Services

Survey Report



Company: Matador Resources
Project: Eddy County, New Mexico (NAD 27)
Site: Guitar 10-24S-28E RB
Well: #221H
Wellbore: Wellbore #1
Design: Surveys

Local Co-ordinate Reference: Well #221H
TVD Reference: WELL @ 3010.00usft (Patterson #297)
MD Reference: WELL @ 3010.00usft (Patterson #297)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM Conroe

Project	Eddy County, New Mexico (NAD 27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Well	#221H				
Well Position	+N/-S	0.00 usft	Northing:	450,086.71 usft	Latitude: 32° 14' 13.639 N
	+E/-W	0.00 usft	Easting:	582,747.47 usft	Longitude: 104° 3' 56.559 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level: 2,981.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2016	2/10/2017	7.28	59.99	48,015

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	270.13	

Survey Program	Date 2/23/2017				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
221.00	536.00	Provided by Matador (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro	
696.00	15,412.00	MS MWD (Wellbore #1)	MWD	OWSG 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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
221.00	0.50	62.00	221.00	0.45	0.85	-0.85	0.23	0.23	0.00
441.00	2.30	0.00	440.93	5.32	1.70	-1.69	0.96	0.82	-28.18
536.00	0.10	87.00	535.90	7.23	1.78	-1.77	2.42	-2.32	91.58
Tie-in to Survey - 536.00' MD									
696.00	0.60	309.60	695.90	7.77	1.28	-1.26	0.42	0.31	-85.88
787.00	2.10	314.00	786.87	9.23	-0.29	0.31	1.65	1.65	4.84
877.00	1.70	311.50	876.82	11.26	-2.48	2.50	0.45	-0.44	-2.78
971.00	2.60	314.70	970.76	13.69	-5.04	5.07	0.97	0.96	3.40
1,064.00	3.10	309.30	1,063.64	16.76	-8.48	8.52	0.61	0.54	-5.81
1,251.00	2.60	289.00	1,250.41	21.35	-16.41	16.45	0.60	-0.27	-10.86
1,437.00	4.40	306.90	1,436.06	27.00	-26.10	26.16	1.12	0.97	9.62
1,623.00	3.40	306.70	1,621.63	34.58	-36.23	36.31	0.54	-0.54	-0.11
1,810.00	2.60	308.70	1,808.37	40.55	-43.99	44.08	0.43	-0.43	1.07
1,996.00	2.10	322.70	1,994.22	45.90	-49.34	49.45	0.41	-0.27	7.53



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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)
2,184.00	3.20	332.70	2,182.02	53.30	-53.84	53.96	0.63	0.59	5.32
2,371.00	2.70	328.00	2,368.77	61.68	-58.56	58.70	0.30	-0.27	-2.51
2,558.00	5.90	317.00	2,555.22	72.44	-67.46	67.62	1.76	1.71	-5.88
2,644.00	5.50	317.50	2,640.79	78.71	-73.26	73.43	0.47	-0.47	0.58
2,842.00	8.90	299.60	2,837.23	93.28	-92.99	93.20	2.04	1.72	-9.04
3,029.00	9.10	298.50	3,021.93	107.48	-118.56	118.81	0.14	0.11	-0.59
3,217.00	8.70	299.40	3,207.66	121.56	-144.02	144.29	0.23	-0.21	0.48
3,404.00	8.20	298.80	3,392.63	134.92	-168.03	168.33	0.27	-0.27	-0.32
3,591.00	7.80	297.20	3,577.81	147.15	-191.00	191.33	0.24	-0.21	-0.86
3,778.00	7.90	297.10	3,763.06	158.80	-213.72	214.08	0.05	0.05	-0.05
3,966.00	7.90	297.30	3,949.27	170.61	-236.71	237.09	0.01	0.00	0.11
4,153.00	5.50	290.00	4,134.99	179.58	-256.55	256.96	1.36	-1.28	-3.90
4,339.00	3.60	290.70	4,320.39	184.69	-270.39	270.81	1.02	-1.02	0.38
4,526.00	1.60	268.70	4,507.19	186.70	-278.49	278.92	1.18	-1.07	-11.76
4,713.00	1.90	266.50	4,694.11	186.46	-284.20	284.62	0.16	0.16	-1.18
4,901.00	0.50	152.10	4,882.07	185.54	-286.92	287.34	1.15	-0.74	-60.85
5,087.00	0.50	170.70	5,068.07	184.02	-286.41	286.83	0.09	0.00	10.00
5,274.00	1.20	51.60	5,255.05	184.43	-284.75	285.16	0.81	0.37	-63.69
5,461.00	0.60	58.10	5,442.03	186.17	-282.38	282.80	0.32	-0.32	3.48
5,648.00	0.80	83.50	5,629.02	186.83	-280.25	280.68	0.19	0.11	13.58
5,835.00	0.80	99.30	5,816.00	186.77	-277.67	278.09	0.12	0.00	8.45
6,022.00	0.90	97.60	6,002.98	186.36	-274.92	275.35	0.06	0.05	-0.91
6,210.00	0.80	122.00	6,190.96	185.47	-272.35	272.77	0.20	-0.05	12.98
6,397.00	0.90	19.30	6,377.95	186.17	-270.75	271.18	0.71	0.05	-54.92
6,584.00	0.60	117.80	6,564.93	187.10	-269.40	269.83	0.62	-0.16	52.67
6,772.00	1.50	44.70	6,752.91	188.39	-266.80	267.23	0.77	0.48	-38.88
6,959.00	0.30	335.00	6,939.88	190.57	-265.29	265.72	0.76	-0.64	-37.27
7,147.00	0.60	282.60	7,127.88	191.23	-266.46	266.89	0.26	0.16	-27.87
7,334.00	1.20	243.40	7,314.86	190.57	-269.16	269.59	0.44	0.32	-20.96
7,521.00	1.70	255.70	7,501.80	189.01	-273.60	274.03	0.31	0.27	6.58
7,709.00	0.50	307.50	7,689.76	188.82	-276.95	277.38	0.77	-0.64	27.55
7,896.00	0.50	86.10	7,876.76	189.37	-276.79	277.22	0.50	0.00	74.12
8,083.00	0.70	247.60	8,063.75	188.99	-277.03	277.46	0.63	0.11	86.36
8,270.00	0.40	290.50	8,250.75	188.78	-278.70	279.12	0.26	-0.16	22.94
8,458.00	1.10	296.40	8,438.73	189.82	-280.93	281.36	0.37	0.37	3.14
8,645.00	0.80	254.60	8,625.71	190.27	-283.79	284.22	0.39	-0.16	-22.35
8,832.00	1.70	157.60	8,812.67	187.36	-284.00	284.42	1.05	0.48	-51.87
9,019.00	0.20	123.20	8,999.64	184.61	-282.67	283.08	0.82	-0.80	-18.40
9,207.00	1.10	24.00	9,187.63	186.08	-281.66	282.08	0.61	0.48	-52.77
9,394.00	0.80	28.80	9,374.61	188.86	-280.30	280.73	0.17	-0.16	2.57
9,581.00	0.50	53.20	9,561.59	190.50	-279.02	279.45	0.21	-0.16	13.05
9,737.00	0.20	100.20	9,717.59	190.86	-278.20	278.63	0.25	-0.19	30.13
9,793.00	0.40	35.40	9,773.59	191.00	-277.99	278.43	0.65	0.36	-115.71



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9,840.00	6.10	340.90	9,820.50	193.49	-278.72	279.15	12.50	12.13	-115.96
9,887.00	11.30	332.60	9,866.94	199.95	-281.65	282.11	11.35	11.06	-17.66
9,933.00	15.50	331.60	9,911.68	209.36	-286.65	287.13	9.14	9.13	-2.17
9,980.00	18.80	330.70	9,956.58	221.49	-293.35	293.85	7.04	7.02	-1.91
10,027.00	22.00	330.50	10,000.63	235.76	-301.39	301.93	6.81	6.81	-0.43
10,074.00	25.30	330.90	10,043.68	252.20	-310.61	311.19	7.03	7.02	0.85
10,121.00	26.50	332.90	10,085.96	270.31	-320.28	320.89	3.16	2.55	4.26
10,168.00	29.20	332.70	10,127.51	289.84	-330.31	330.97	5.75	5.74	-0.43
10,214.00	32.10	330.20	10,167.08	310.42	-341.54	342.24	6.89	6.30	-5.43
10,261.00	36.20	327.50	10,205.97	332.97	-355.21	355.96	9.30	8.72	-5.74
10,308.00	41.70	326.40	10,242.51	357.72	-371.33	372.14	11.79	11.70	-2.34
10,355.00	46.00	321.80	10,276.40	384.05	-390.45	391.32	11.38	9.15	-9.79
10,401.00	49.60	316.10	10,307.31	409.69	-412.84	413.77	12.06	7.83	-12.39
10,448.00	52.00	310.10	10,337.03	434.53	-439.43	440.42	11.13	5.11	-12.77
10,495.00	54.60	304.70	10,365.13	457.38	-469.37	470.40	10.74	5.53	-11.49
10,542.00	57.10	299.60	10,391.52	478.04	-502.29	503.37	10.43	5.32	-10.85
10,589.00	60.80	296.00	10,415.77	496.79	-537.90	539.03	10.25	7.87	-7.66
10,609.66	61.88	293.95	10,425.68	504.44	-554.34	555.48	10.15	5.23	-9.91
330' Hard Line Intersection - 10609.66' MD									
10,636.00	63.30	291.40	10,437.80	513.45	-575.91	577.07	10.15	5.39	-9.69
10,682.00	66.80	287.50	10,457.21	527.31	-615.23	616.42	10.81	7.61	-8.48
10,729.00	69.40	283.30	10,474.75	538.88	-657.26	658.48	9.97	5.53	-8.94
10,776.00	71.40	279.70	10,490.52	547.69	-700.64	701.88	8.38	4.26	-7.66
10,823.00	73.20	278.40	10,504.81	554.73	-744.85	746.11	4.65	3.83	-2.77
10,874.00	73.70	276.90	10,519.33	561.24	-793.30	794.57	2.98	0.98	-2.94
10,903.00	73.90	273.40	10,527.43	563.74	-821.03	822.31	11.61	0.69	-12.07
10,998.00	75.20	269.70	10,552.74	566.21	-912.55	913.83	4.00	1.37	-3.89
11,092.00	82.20	268.10	10,571.15	564.42	-1,004.65	1,005.93	7.63	7.45	-1.70
11,186.00	89.00	268.20	10,578.36	561.40	-1,098.27	1,099.54	7.23	7.23	0.11
11,281.00	91.70	265.30	10,577.78	556.01	-1,193.09	1,194.35	4.17	2.84	-3.05
11,375.00	89.30	265.10	10,576.96	548.15	-1,286.75	1,287.99	2.56	-2.55	-0.21
11,469.00	90.90	265.30	10,576.79	540.28	-1,380.42	1,381.64	1.72	1.70	0.21
11,563.00	91.80	267.70	10,574.58	534.55	-1,474.21	1,475.42	2.73	0.96	2.55
11,657.00	92.50	270.30	10,571.05	532.91	-1,568.12	1,569.33	2.86	0.74	2.77
11,751.00	91.60	270.40	10,567.69	533.48	-1,662.06	1,663.27	0.96	-0.96	0.11
11,845.00	90.10	270.30	10,566.30	534.06	-1,756.04	1,757.25	1.60	-1.60	-0.11
11,940.00	95.00	274.00	10,562.07	537.61	-1,850.84	1,852.05	6.46	5.16	3.89
12,034.00	92.70	269.70	10,555.75	540.63	-1,944.55	1,945.77	5.18	-2.45	-4.57
12,127.00	92.00	271.20	10,551.94	541.36	-2,037.46	2,038.69	1.78	-0.75	1.61
12,222.00	92.00	272.20	10,548.63	544.18	-2,132.36	2,133.59	1.05	0.00	1.05
12,316.00	89.80	270.50	10,547.15	546.39	-2,226.32	2,227.55	2.96	-2.34	-1.81
12,409.00	92.10	271.20	10,545.61	547.77	-2,319.29	2,320.52	2.59	2.47	0.75
12,503.00	91.20	270.20	10,542.90	548.92	-2,413.24	2,414.48	1.43	-0.96	-1.06
12,597.00	92.20	273.80	10,540.11	552.20	-2,507.12	2,508.37	3.97	1.06	3.83



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12,690.00	90.40	270.80	10,538.00	555.92	-2,600.01	2,601.27	3.76	-1.94	-3.23
12,784.00	91.60	273.40	10,536.36	559.37	-2,693.92	2,695.19	3.05	1.28	2.77
12,878.00	91.20	274.50	10,534.06	565.84	-2,787.67	2,788.95	1.24	-0.43	1.17
12,971.00	90.80	277.10	10,532.44	575.24	-2,880.17	2,881.47	2.83	-0.43	2.80
13,065.00	92.70	277.40	10,529.57	587.09	-2,973.37	2,974.70	2.05	2.02	0.32
13,159.00	89.70	274.40	10,527.60	596.75	-3,066.83	3,068.18	4.51	-3.19	-3.19
13,253.00	86.70	268.40	10,530.56	599.05	-3,160.70	3,162.06	7.13	-3.19	-6.38
13,347.00	87.10	266.40	10,535.64	594.79	-3,254.47	3,255.81	2.17	0.43	-2.13
13,440.00	90.30	262.90	10,537.75	586.12	-3,347.01	3,348.33	5.10	3.44	-3.76
13,534.00	92.10	263.20	10,535.78	574.75	-3,440.29	3,441.59	1.94	1.91	0.32
13,628.00	92.40	265.90	10,532.09	565.83	-3,533.79	3,535.06	2.89	0.32	2.87
13,722.00	91.40	265.10	10,528.97	558.46	-3,627.45	3,628.70	1.36	-1.06	-0.85
13,816.00	91.50	266.70	10,526.59	551.74	-3,721.17	3,722.41	1.70	0.11	1.70
13,911.00	94.20	269.40	10,521.87	548.51	-3,815.98	3,817.22	4.02	2.84	2.84
14,004.00	93.70	268.70	10,515.46	546.97	-3,908.75	3,909.98	0.92	-0.54	-0.75
14,098.00	90.90	269.00	10,511.69	545.09	-4,002.64	4,003.87	3.00	-2.98	0.32
14,192.00	91.50	268.80	10,509.72	543.28	-4,096.60	4,097.83	0.67	0.64	-0.21
14,286.00	89.20	266.80	10,509.15	539.68	-4,190.52	4,191.74	3.24	-2.45	-2.13
14,381.00	91.80	268.40	10,508.32	535.70	-4,285.42	4,286.63	3.21	2.74	1.68
14,474.00	90.70	267.50	10,506.29	532.37	-4,378.34	4,379.54	1.53	-1.18	-0.97
14,568.00	93.30	274.00	10,503.01	533.60	-4,472.22	4,473.42	7.44	2.77	6.91
14,663.00	93.70	273.90	10,497.21	540.13	-4,566.81	4,568.03	0.43	0.42	-0.11
14,757.00	90.50	273.10	10,493.76	545.86	-4,660.56	4,661.79	3.51	-3.40	-0.85
14,851.00	90.60	276.80	10,492.86	553.97	-4,754.19	4,755.44	3.94	0.11	3.94
14,945.00	90.70	280.60	10,491.79	568.19	-4,847.09	4,848.36	4.04	0.11	4.04
15,040.00	92.90	278.10	10,488.81	583.61	-4,940.77	4,942.08	3.50	2.32	-2.63
15,134.00	91.10	274.50	10,485.53	593.92	-5,034.12	5,035.46	4.28	-1.91	-3.83
15,228.00	90.80	277.60	10,483.97	603.82	-5,127.57	5,128.93	3.31	-0.32	3.30
15,319.79	90.80	277.60	10,482.69	615.96	-5,218.55	5,219.93	0.00	0.00	0.00
330' Hard Line Intersection - 15319.79' MD									
15,412.00	90.80	277.60	10,481.40	628.15	-5,309.94	5,311.35	0.00	0.00	0.00
Projection to TD-15412.00' MD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
536.00	535.90	7.23	1.78	Tie-in to Survey - 536.00' MD
10,609.66	10,425.68	504.44	-554.34	330' Hard Line Intersection - 10609.66' MD
15,319.79	10,482.69	615.96	-5,218.55	330' Hard Line Intersection - 15319.79' MD
15,412.00	10,481.40	628.15	-5,309.94	Projection to TD-15412.00' MD