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Survey Company: MS Energy Services
MWD Surveyor Name: Tim Little
Survey Type: MWD
Operating Company: Matador Production Co.
Well Name & Number: Guitar 10-24-28 RB 221H
API Number: 30-015-43966
Surveyed Depths: 696' – 15,228' MD; PTB: 15,412'
Dates Performed: 02/07/2017 – 02/23/2017
Location: Eddy County, NM

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 05 2017

RECEIVED

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 it conforms to the principles and procedures as set forth by MS Energy Services.

Digitally signed by:

Title: MWD Field Specialist

Date: 2017-03-15

Email: tlittle@msenergyservices.com



SURVEY CALCULATION PROGRAM

3/15/17 20:43

Company: Matador Production Co.
Well Name: Guitar 10-24-28 RB 221H
Location: Eddy County, NM
Rig: Patterson #297
Job Number: DDMO-170068
API #: 30-015-43966

Magnetic Declination: 7.13



REFERENCED TO GRID NORTH

Vertical Section Azimuth: 270.13

Proposed Direction: 270.13

Survey Calculation Method: Minimum Curvature

#	PTB:	MD		INC		AZM		TVD		N/S		E/W		Surface		Closure		DLS/		BUR/	
		Depth	Feet	Inc	Degrees	Azm	Degrees	Feet	Feet	Feet	Feet	Feet	Feet	Vert	Sec	Distance	Azm	100	100	VS	100'

TIE IN		536	0.10	87.00	535.90	7.23	1.78	10481.4	628.15	-5309.94	13.83	0.42	0.31								
1		696	0.60	309.60	695.90	7.77	1.27				7.88	9.31	0.31			7.45	9.31	0.42	0.31		
2		787	2.10	314.00	786.87	9.23	-0.29				9.24	358.18	1.65			9.24	358.18	1.65	1.65		
3		877	1.70	311.50	876.82	11.26	-2.48				11.53	347.59	0.45			11.53	347.59	0.45	-0.44		
4		971	2.60	314.70	970.75	13.69	-5.04				14.58	339.79	0.97			14.58	339.79	0.97	0.96		
5		1,064	3.10	309.30	1063.64	16.76	-8.48				18.79	333.16	0.61			18.79	333.16	0.61	0.54		
6		1,251	2.60	289.00	1250.41	21.35	-16.41				26.92	322.45	0.60			26.92	322.45	0.60	-0.27		
7		1,437	4.40	306.90	1436.06	27.01	-26.10				37.56	315.97	1.12			37.56	315.97	1.12	0.97		
8		1,623	3.40	306.70	1621.63	34.59	-36.23				50.09	313.67	0.54			50.09	313.67	0.54	-0.54		
9		1,810	2.60	308.70	1808.37	40.55	-43.99				59.83	312.67	0.43			59.83	312.67	0.43	-0.43		
10		1,996	2.10	322.70	1994.21	45.90	-49.34				67.39	312.93	0.41			67.39	312.93	0.41	-0.27		
11		2,184	3.20	332.70	2182.01	53.30	-53.84				75.76	314.71	0.63			75.76	314.71	0.63	0.59		
12		2,371	2.70	328.00	2368.76	61.68	-58.57				85.05	316.48	0.30			85.05	316.48	0.30	-0.27		
13		2,558	5.90	317.00	2555.22	72.44	-67.46				98.99	317.04	1.76			98.99	317.04	1.76	1.71		
14		2,644	5.50	317.50	2640.79	78.71	-73.26				107.53	317.06	0.47			107.53	317.06	0.47	-0.47		
15		2,842	8.90	299.60	2837.22	93.28	-92.99				131.72	315.09	2.04			131.72	315.09	2.04	1.72		
16		3,029	9.10	298.50	3021.92	107.48	-118.57				160.03	312.19	0.14			160.03	312.19	0.14	0.11		
17		3,217	8.70	299.40	3207.66	121.56	-144.02				188.46	310.17	0.23			188.46	310.17	0.23	-0.21		
18		3,404	8.20	298.80	3392.63	134.92	-168.03				215.49	308.76	0.27			215.49	308.76	0.27	-0.27		
19		3,591	7.80	297.20	3577.81	147.15	-191.00				241.11	307.61	0.24			241.11	307.61	0.24	-0.21		
20		3,778	7.90	297.10	3763.05	158.80	-213.73				266.27	306.61	0.05			266.27	306.61	0.05	0.05		
21		3,966	7.90	297.30	3949.27	170.62	-236.71				291.79	305.78	0.01			291.79	305.78	0.01	0.00		
22		4,153	5.50	290.00	4134.98	179.58	-256.55				313.16	304.99	1.36			313.16	304.99	1.36	-1.28		
23		4,339	3.60	290.70	4320.39	184.69	-270.39				327.45	304.33	1.02			327.45	304.33	1.02	-1.02		
24		4,526	1.60	268.70	4507.19	186.71	-278.49				335.29	303.84	1.18			335.29	303.84	1.18	-1.07		
25		4,713	1.90	266.50	4694.10	186.46	-284.20				339.90	303.27	0.16			339.90	303.27	0.16	0.16		
26		4,901	0.50	152.10	4882.07	185.54	-286.93				341.69	302.89	1.15			341.69	302.89	1.15	-0.74		
27		5,087	0.50	170.70	5068.06	184.02	-286.42				340.44	302.72	0.09			340.44	302.72	0.09	0.00		
28		5,274	1.20	51.60	5255.05	184.43	-284.75				339.26	302.93	0.81			339.26	302.93	0.81	0.37		
29		5,461	0.60	58.10	5442.03	186.17	-282.38				338.23	303.40	0.32			338.23	303.40	0.32	-0.32		
30		5,648	0.80	83.50	5629.01	186.83	-280.25				336.82	303.69	0.19			336.82	303.69	0.19	0.11		
31		5,835	0.80	99.30	5815.99	186.77	-277.67				334.64	303.93	0.12			334.64	303.93	0.12	0.00		
32		6,022	0.90	97.60	6002.97	186.37	-274.93				332.14	304.13	0.06			332.14	304.13	0.06	0.05		
33		6,210	0.80	122.00	6190.95	185.47	-272.35				329.51	304.26	0.20			329.51	304.26	0.20	-0.05		



V09.04.02

SURVEY CALCULATION PROGRAM

3/15/17 20:43

Company:	Matador Production Co.
Well Name:	Guitar 10-24-28 RB 221H
Location:	Eddy County, NM
Rig:	Patterson #297
Job Number:	DDMO-170068
API #:	30-015-43966

REFERENCED TO GRID NORTH

Magnetic Declination:	7.13
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Proposed Direction:	270.13
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Vertical Section Azimuth:	270.13
Survey Calculation Method:	Minimum Curvature
PTB:	MD
	15,412
	INC
	90.8
	AZM
	277.6
	N/S
	Feet
	186.17
	-270.76
	271.18
	628.15
	N/S
	Feet
	10481.4
	E/W
	Distance
	328.58
	304.51
	Azm
	-5309.94
	E/W
	VS
	5311.35

#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	EW Feet	Surface Vert Sec	Distance	Closure Azim	DLS/ 100	BUR/ 100'
34	6,397	0.90	19.30	6377.94	186.17	-270.76	271.18	328.58	304.51	0.71	0.05
35	6,584	0.60	117.80	6564.93	187.10	-269.40	269.83	328.00	304.78	0.62	-0.16
36	6,772	1.50	44.70	6752.90	188.39	-266.80	267.23	326.61	305.23	0.77	0.48
37	6,959	0.30	335.00	6939.88	190.57	-265.29	265.72	326.64	305.69	0.76	-0.64
38	7,147	0.60	282.60	7127.87	191.23	-266.46	266.89	327.98	305.67	0.26	0.16
39	7,334	1.20	243.40	7314.85	190.57	-269.16	269.60	329.80	305.30	0.44	0.32
40	7,521	1.70	255.70	7501.79	189.01	-273.60	274.03	332.54	304.64	0.31	0.27
41	7,709	0.50	307.50	7689.76	188.82	-276.96	277.38	335.20	304.28	0.77	-0.64
42	7,896	0.50	86.10	7876.75	189.37	-276.79	277.22	335.37	304.38	0.50	0.00
43	8,083	0.70	247.60	8063.75	188.99	-277.03	277.46	335.36	304.30	0.63	0.11
44	8,270	0.40	290.50	8250.74	188.78	-278.70	279.13	336.62	304.11	0.26	-0.16
45	8,458	1.10	296.40	8438.73	189.82	-280.93	281.36	339.04	304.05	0.37	0.37
46	8,645	0.80	254.60	8625.70	190.27	-283.80	284.23	341.67	303.84	0.39	-0.16
47	8,832	1.70	157.60	8812.67	187.36	-284.00	284.42	340.23	303.41	1.05	0.48
48	9,019	0.20	123.20	8999.64	184.61	-282.67	283.09	337.61	303.15	0.82	-0.80
49	9,207	1.10	24.00	9187.63	186.08	-281.66	282.08	337.58	303.45	0.61	0.48
50	9,394	0.80	28.80	9374.60	188.87	-280.30	280.73	337.99	303.97	0.17	-0.16
51	9,581	0.50	53.20	9561.59	190.50	-279.02	279.45	337.85	304.32	0.21	-0.16
52	9,737	0.20	100.20	9717.59	190.86	-278.20	278.64	337.38	304.45	0.25	-0.19
53	9,793	0.40	35.40	9773.59	191.00	-277.99	278.43	337.29	304.49	0.65	0.36
54	9,840	6.10	340.90	9820.49	193.50	-278.72	279.16	339.30	304.77	12.50	12.13
55	9,887	11.30	332.60	9866.94	199.95	-281.66	282.11	345.41	305.37	11.35	11.06
56	9,933	15.50	331.60	9911.68	209.36	-286.66	287.13	354.97	306.14	9.14	9.13
57	9,980	18.80	330.70	9956.58	221.49	-293.35	293.85	367.58	307.05	7.04	7.02
58	10,027	22.00	330.50	10000.63	235.76	-301.39	301.93	382.65	308.03	6.81	6.81
59	10,074	25.30	330.90	10043.67	252.20	-310.62	311.19	400.11	309.07	7.03	7.02
60	10,121	26.50	332.90	10085.95	270.31	-320.28	320.89	419.10	310.16	3.16	2.55
61	10,168	29.20	332.70	10127.51	289.84	-330.31	330.97	439.45	311.27	5.75	5.74
62	10,214	32.10	330.20	10167.08	310.42	-341.54	342.24	461.53	312.27	6.89	6.30
63	10,261	36.20	327.50	10205.97	332.98	-355.21	355.96	486.87	313.15	9.30	8.72
64	10,308	41.70	326.40	10242.50	357.72	-371.33	372.14	515.61	313.93	11.79	11.70
65	10,355	46.00	321.80	10276.40	384.05	-390.45	391.32	547.67	314.53	11.38	9.15
66	10,401	49.60	316.10	10307.31	409.69	-412.84	413.77	581.62	314.78	12.06	7.83
67	10,448	52.00	310.10	10337.03	434.53	-439.43	440.42	617.99	314.68	11.13	5.11



SURVEY CALCULATION PROGRAM

3/15/17 20:43

Company:	Matador Production Co.
Well Name:	Guitar 10-24-28 RB 221H
Location:	Eddy County, NM
Rig:	Patterson #297
Job Number:	DDMO-170068
API #:	30-015-43966

Magnetic Declination: 7.13



REFERENCED TO GRID NORTH

Vertical Section Azimuth:	270.13
Proposed Direction:	270.13

Survey Calculation Method:

Minimum Curvature

PTB:	MD	Inc	Azm	TVD	Feet	N/S	Feet	E/W	Feet	Surface	Vert Sec	Distance	Closure	Azm	DLS/ 100	BUR/ 100'
	15,412			90.8	277.6			10481.4				628.15		-5309.94		5311.35

68	10.495	54.60	304.70	10365.13	457.38	-469.37	470.40	655.36	314.26	10.74	5.53
69	10.542	57.10	299.60	10391.52	478.04	-502.29	503.38	693.41	313.58	10.43	5.32
70	10.589	60.80	296.00	10415.76	496.79	-537.91	539.03	732.22	312.72	10.25	7.87
71	10.636	63.30	291.40	10437.80	513.45	-575.91	577.08	771.56	311.72	10.15	5.32
72	10.682	66.80	287.50	10457.21	527.32	-615.23	616.42	810.29	310.60	10.81	7.61
73	10.729	69.40	283.30	10474.74	538.88	-657.26	658.48	849.93	309.35	9.97	5.53
74	10.776	71.40	279.70	10490.51	547.69	-700.64	701.88	889.31	308.01	8.38	4.26
75	10.823	73.20	278.40	10504.80	554.73	-744.85	746.11	928.73	306.68	4.65	3.83
76	10.874	73.70	276.90	10519.33	561.24	-793.30	794.58	971.76	305.28	2.98	0.98
77	10.903	73.90	273.40	10527.42	563.74	-821.04	822.31	995.94	304.47	11.61	0.69
78	10.998	75.20	269.70	10552.74	566.21	-912.55	913.83	1073.94	301.82	4.00	1.37
79	11.092	82.20	268.10	10571.15	564.42	-1004.65	1005.93	1152.34	299.33	7.63	7.45
80	11.186	89.00	268.20	10578.35	561.40	-1098.27	1099.54	1233.44	297.07	7.23	7.23
81	11.281	91.70	265.30	10577.77	556.01	-1193.10	1194.35	1316.29	294.99	4.17	2.84
82	11.375	89.30	265.10	10576.95	548.15	-1286.76	1288.00	1398.64	293.07	2.56	-2.55
83	11.469	90.90	265.30	10576.79	540.28	-1380.42	1381.64	1482.39	291.37	1.72	1.70
84	11.563	91.80	267.70	10574.58	534.55	-1474.21	1475.42	1568.13	289.93	2.73	0.96
85	11.657	92.50	270.30	10571.05	532.91	-1568.12	1569.33	1656.20	288.77	2.86	0.74
86	11.751	91.60	270.40	10567.69	533.48	-1662.06	1663.27	1745.58	287.80	0.96	-0.96
87	11.845	90.10	270.30	10566.29	534.06	-1756.05	1757.25	1835.46	286.92	1.60	-1.60
88	11.940	95.00	274.00	10562.06	537.61	-1850.84	1852.06	1927.34	286.20	6.46	5.16
89	12.034	92.70	269.70	10555.75	540.63	-1944.55	1945.77	2018.31	285.54	5.18	-2.45
90	12.127	92.00	271.20	10551.94	541.36	-2037.47	2038.69	2108.16	284.88	1.78	-0.75
91	12.222	92.00	272.20	10548.62	544.18	-2132.37	2133.59	2200.71	284.32	1.05	0.00
92	12.316	89.80	270.50	10547.14	546.39	-2226.32	2227.55	2292.39	283.79	2.96	-2.34
93	12.409	92.10	271.20	10545.60	547.77	-2319.29	2320.53	2383.10	283.29	2.59	2.47
94	12.503	91.20	270.20	10542.90	548.92	-2413.24	2414.48	2474.88	282.81	1.43	-0.96
95	12.597	92.20	273.80	10540.11	552.20	-2507.13	2508.37	2567.22	282.42	3.97	1.06
96	12.690	90.40	270.80	10538.00	555.93	-2600.01	2601.27	2658.78	282.07	3.76	-1.94
97	12.784	91.60	273.40	10536.36	559.37	-2693.93	2695.19	2751.39	281.73	3.05	1.28
98	12.878	91.20	274.50	10534.06	565.84	-2787.67	2788.95	2844.52	281.47	1.24	-0.43
99	12.971	90.80	277.10	10532.44	575.24	-2880.17	2881.47	2937.06	281.29	2.83	-0.43
100	13.065	92.70	277.40	10529.56	587.09	-2973.37	2974.70	3030.78	281.17	2.05	2.02



SURVEY CALCULATION PROGRAM

3/15/17 20:43

Company: Matador Production Co.
Well Name: Guitar 10-24-28 RB 221H
Location: Eddy County, NM
Rig: Patterson #297
Job Number: DDMO-170068
API #: 30-015-43966

Magnetic Declination: 7.13



REFERENCED TO GRID NORTH

Vertical Section Azimuth: 270.13

Proposed Direction: 270.13

Survey Calculation Method: Minimum Curvature

#	Depth		Inc		Azimuth		TVD		N/S		Feet		E/W		Surface		Distance		Closure		DLS/		BUR/	
	Feet	Feet	Degrees	Degrees	Degrees	Degrees	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Vert Sec	Vert Sec	Distance	Distance	Distance	Distance	100	100	100'	100'
101	13,159		89.70		274.40		10527.60		596.75		3066.83		-3066.83		3068.18		3124.35		281.01		4.51		-3.19	
102	13,253		86.70		268.40		10530.55		599.05		-3160.71		-3160.71		3162.06		3216.97		280.73		7.13		-3.19	
103	13,347		87.10		266.40		10535.64		594.79		-3254.47		-3254.47		3255.81		3308.37		280.36		2.17		0.43	
104	13,440		90.30		262.90		10537.75		586.12		-3347.01		-3347.01		3348.33		3397.94		279.93		5.10		3.44	
105	13,534		92.10		263.20		10535.78		574.75		-3440.30		-3440.30		3441.59		3487.98		279.48		1.94		1.91	
106	13,628		92.40		265.90		10532.09		565.83		-3533.79		-3533.79		3535.07		3578.80		279.10		2.89		0.32	
107	13,722		91.40		265.10		10528.97		558.46		-3627.45		-3627.45		3628.71		3670.18		278.75		1.36		-1.06	
108	13,816		91.50		266.70		10526.59		551.74		-3721.17		-3721.17		3722.42		3761.86		278.43		1.70		0.11	
109	13,911		94.20		269.40		10521.87		548.51		-3815.98		-3815.98		3817.22		3855.20		278.18		4.02		2.84	
110	14,004		93.70		268.70		10515.46		546.97		-3908.75		-3908.75		3909.98		3946.83		277.97		0.92		-0.54	
111	14,098		90.90		269.00		10511.69		545.09		-4002.65		-4002.65		4003.87		4039.59		277.75		3.00		-2.98	
112	14,192		91.50		268.80		10509.72		543.28		-4096.61		-4096.61		4097.83		4132.47		277.55		0.67		0.64	
113	14,286		89.20		266.80		10509.15		539.68		-4190.52		-4190.52		4191.74		4225.13		277.34		3.24		-2.45	
114	14,381		91.80		268.40		10508.32		535.70		-4285.43		-4285.43		4286.63		4318.78		277.13		3.21		2.74	
115	14,474		90.70		267.50		10506.29		532.37		-4378.34		-4378.34		4379.54		4410.59		276.93		1.53		-1.18	
116	14,568		93.30		274.00		10503.00		533.60		-4472.22		-4472.22		4473.42		4503.94		276.80		7.44		2.77	
117	14,663		93.70		273.90		10497.20		540.13		-4566.82		-4566.82		4568.03		4598.65		276.75		0.43		0.42	
118	14,757		90.50		273.10		10493.76		545.86		-4660.56		-4660.56		4661.79		4692.42		276.68		3.51		-3.40	
119	14,851		90.60		276.80		10492.86		553.97		-4754.19		-4754.19		4755.44		4786.36		276.65		3.94		0.11	
120	14,945		90.70		280.60		10491.79		568.19		-4847.09		-4847.09		4848.37		4880.28		276.69		4.04		0.11	
121	15,040		92.90		278.10		10488.81		583.61		-4940.77		-4940.77		4942.08		4975.12		276.74		3.50		2.32	
122	15,134		91.10		274.50		10485.52		593.92		-5034.12		-5034.12		5035.46		5069.04		276.73		4.28		-1.91	
123	15,228		90.80		277.60		10483.97		603.82		-5127.58		-5127.58		5128.93		5163.01		276.72		3.31		-0.32	
PTB:	15,412		90.80		277.60		10481.40		628.15		-5309.94		-5309.94		5311.35		5346.97		276.75		0.00		0.00	