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MS Energy Services Survey Data Certification

MS Energy Job Number: DDMO-171153
Survey Type: MWD
Operating Company: Matador Production Company
Well Name & Number: Michael Collins 11 23S 27E RB 206H
Location: Eddy County, NM
API Number: 30-015-44472
Tie In Depth: Surface
Surveyed Depths: 136' – 14,128' MD
Projected TD Survey: 14,209' MD
Dates Performed: 11/12/2017 – 12/20/2017

**NM OIL CONSERVATION
ARTESIA DISTRICT**

MAR 20 2018

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: 

MWD Surveyor Name: Jon Gann

Date: 01-16-2018

Email: jgann@msenergyservices.com



V09.04.02

SURVEY CALCULATION PROGRAM

1/16/18 14:49

Company:	Matador Production Company		
Well Name:	Michael Collins 11 23S 27E RB 206H		
Location:	Eddy County, NM		
Rig:	Patterson #297		
Job Number:	DDMO-171153		
API #:	30-015-44472		

REFERENCED TO GRID NORTH ▼

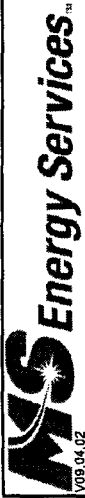
Magnetic Declination: 7.16

Proposed Direction: 281.54

Vertical Section Azimuth: 281.54

Survey Calculation Method: Minimum Curvature

#	Depth Feet	Inc		Azim		TVD		N/S		E/W		Surface		Closure		DLS/ 100'	BUR/ 100'
		Degrees	MD	Degrees	Azm	Feet	INC	Feet	AZM	Feet	TVD	Feet	Vert Sec	Distance	Azm		
TIE IN	0	0.00		0.00		0.00		0.00		0.00					0.00		
1	136	0.50		117.60		136.00		-0.27		0.53			-0.57	0.59	117.60	0.37	0.37
2	261	0.60		63.80		260.99		-0.24		1.60			-1.61	1.61	98.50	0.40	0.08
3	358	1.00		66.50		357.98		0.32		2.83			-2.71	2.85	83.48	0.41	0.41
4	509	1.10		63.90		508.96		1.49		5.34			-4.93	5.54	74.44	0.07	0.07
5	691	0.80		50.20		690.93		3.07		7.88			-7.11	8.46	68.74	0.21	-0.16
6	872	0.30		54.40		871.92		4.15		9.24			-8.22	10.13	65.80	0.28	-0.28
7	1,059	1.90		20.80		1058.88		7.34		10.74			-9.05	13.00	55.66	0.89	0.86
8	1,247	2.60		33.80		1246.74		13.79		14.22			-11.17	19.81	45.87	0.46	0.37
9	1,434	3.10		17.90		1433.51		22.13		18.13			-13.34	28.61	39.33	0.50	0.27
10	1,621	4.40		45.00		1620.12		32.01		24.76			-17.85	40.47	37.72	1.16	0.70
11	1,808	5.10		44.50		1806.48		43.01		35.66			-26.33	55.87	39.66	0.37	0.37
12	1,995	7.30		50.80		1992.37		56.45		50.69			-38.37	75.87	41.92	1.23	1.18
13	2,182	8.10		35.40		2177.71		74.70		67.53			-51.22	100.70	42.11	1.18	0.43
14	2,365	8.80		17.30		2348.86		97.28		78.53			-57.48	125.02	38.91	1.58	0.40
15	2,471	10.40		10.90		2463.23		116.03		83.15			-58.25	142.75	35.63	1.66	1.38
16	2,658	10.10		22.20		2647.27		147.79		92.54			-61.10	174.37	32.05	1.09	-0.16
17	2,845	14.00		21.90		2830.11		183.97		107.17			-68.20	212.91	30.22	2.09	2.09
18	3,032	14.10		8.60		3011.56		227.49		119.02			-71.10	256.75	27.62	1.72	0.05
19	3,220	15.90		18.30		3193.18		274.60		130.53			-72.96	304.04	25.42	1.64	0.96
20	3,407	17.30		23.20		3372.39		324.48		149.53			-81.60	357.28	24.74	1.06	0.75
21	3,594	18.50		19.00		3550.34		378.09		170.15			-91.07	414.61	24.23	0.94	0.64
22	3,781	18.90		21.80		3727.48		434.26		191.05			-100.31	474.43	23.75	0.53	0.21
23	3,968	18.10		22.60		3904.81		489.20		213.46			-111.28	533.75	23.57	0.45	-0.43
24	4,155	22.50		20.70		4080.15		549.52		237.29			-122.56	598.56	23.35	2.38	2.35
25	4,342	19.80		21.00		4254.54		612.57		261.29			-133.46	665.97	23.10	1.45	-1.44
26	4,529	16.20		20.30		4432.36		666.62		281.69			-142.64	723.70	22.91	1.93	-1.93
27	4,717	13.10		17.80		4614.23		711.52		297.31			-148.96	771.14	22.68	1.68	-1.65
28	4,904	12.10		24.00		4796.73		749.60		311.76			-155.50	811.85	22.58	0.90	-0.53
29	5,091	14.90		23.90		4978.55		789.50		329.48			-164.88	855.49	22.65	1.50	1.50
30	5,278	10.90		20.50		5160.79		828.05		345.42			-172.78	897.21	22.64	2.18	-2.14
31	5,466	8.20		19.50		5346.17		857.35		356.12			-177.41	928.37	22.56	1.44	-1.44
32	5,653	5.80		15.90		5531.76		879.01		363.16			-179.97	951.07	22.45	1.30	-1.28
33	5,840	4.60		11.50		5717.99		895.44		367.24			-180.68	967.83	22.30	0.68	-0.64



V09.04.02

SURVEY CALCULATION PROGRAM

1/16/18 14:49

Company:	Matador Production Company		
Well Name:	Michael Collins 11 23S 27E RB 206H		
Location:	Eddy County, NM		
Rig:	Patterson #297		
Job Number:	DDMO-171153		
API #:	30-015-44472		

Magnetic Declination:

7.16

REFERENCED TO GRID NORTH

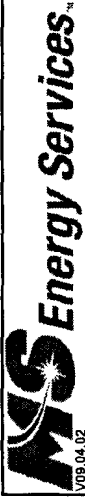
Vertical Section Azimuth:

281.54

Proposed Direction:

281.54

Survey Calculation Method:				Minimum Curvature							
PTB:	MD	Inc	Azm	INC	AZM	TVD	N/S	E/W	Surface	Closure	VS
	14,209			85.7	278.2	9134.78	1099.8	-4719.67			4844.28
#	Depth Feet	Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Distance	Azm	DLS/ 100	BUR/ 100'
34	6,027	4.80	318.60	5904.44	908.67	363.56	-174.43	978.70	21.81	2.24	0.11
35	6,214	4.80	268.50	6090.87	914.33	350.56	-160.56	979.23	20.98	2.17	0.00
36	6,401	1.30	167.40	6277.64	912.06	343.20	-153.80	974.49	20.62	2.79	-1.87
37	6,495	1.00	258.40	6371.63	910.85	342.63	-153.48	973.16	20.61	1.76	-0.32
38	6,589	2.30	222.50	6465.59	909.29	340.55	-151.76	970.97	20.53	1.70	1.38
39	6,682	0.80	143.90	6558.56	907.39	339.67	-151.28	968.89	20.52	2.45	-1.61
40	6,776	0.90	226.50	6652.55	906.36	339.52	-151.34	967.86	20.54	1.20	0.11
41	6,870	0.80	61.70	6746.55	906.16	339.56	-151.42	967.69	20.54	1.79	-0.11
42	6,963	0.40	111.60	6839.55	906.35	340.44	-152.24	968.17	20.59	0.67	-0.43
43	7,057	1.80	56.70	6933.53	907.04	341.98	-153.61	969.36	20.66	1.71	1.49
44	7,151	1.70	27.10	7027.49	909.09	343.85	-155.03	971.94	20.72	0.96	-0.11
45	7,244	2.70	357.80	7120.42	912.51	344.39	-154.88	975.33	20.68	1.59	1.08
46	7,338	1.10	296.10	7214.37	915.12	343.49	-153.48	977.46	20.57	2.54	-1.70
47	7,432	1.50	269.90	7308.35	915.51	341.45	-151.40	977.11	20.45	0.75	0.43
48	7,525	1.20	275.70	7401.32	915.60	339.27	-149.24	976.44	20.33	0.35	-0.32
49	7,619	1.20	270.50	7495.30	915.71	337.30	-147.30	975.86	20.22	0.12	0.00
50	7,712	0.50	61.00	7588.30	915.92	336.69	-146.65	975.84	20.18	1.78	-0.75
51	7,806	0.80	357.40	7682.29	916.77	337.01	-146.80	976.75	20.18	0.78	0.32
52	7,899	1.10	297.90	7775.28	917.84	336.20	-145.78	977.47	20.12	1.05	0.32
53	7,993	0.70	197.70	7869.27	917.71	335.22	-144.86	977.02	20.07	1.49	-0.43
54	8,087	1.60	314.90	7963.26	918.09	334.12	-143.70	977.00	20.00	2.15	0.96
55	8,181	0.20	92.80	8057.25	919.01	333.35	-142.77	977.60	19.94	1.87	-1.49
56	8,275	0.40	219.00	8151.25	918.75	333.31	-142.78	977.34	19.94	0.58	0.21
57	8,368	1.50	217.00	8244.23	917.52	332.37	-142.10	975.87	19.91	1.18	1.18
58	8,462	1.70	140.10	8338.21	915.47	332.53	-142.66	973.99	19.96	2.12	0.21
59	8,556	1.90	170.80	8432.16	912.86	333.67	-144.31	971.93	20.08	1.03	0.21
60	8,676	2.10	198.90	8552.09	908.82	333.28	-144.73	968.00	20.14	0.83	0.17
61	8,770	1.90	200.00	8646.04	905.72	332.19	-144.28	964.72	20.14	0.22	-0.21
62	8,817	6.50	281.40	8692.92	905.52	329.31	-141.50	963.54	19.98	13.81	9.79
63	8,864	13.50	288.60	8739.18	907.80	321.49	-133.39	963.04	19.50	15.10	14.89
64	8,911	17.80	293.20	8784.43	912.38	309.68	-120.90	963.50	18.75	9.52	9.15
65	8,957	19.60	300.80	8828.01	919.10	296.59	-106.73	965.77	17.88	6.58	3.91
66	9,004	22.60	306.40	8871.85	928.50	282.55	-91.09	970.54	16.93	7.68	6.38
67	9,051	27.20	310.60	8914.48	940.86	267.11	-73.49	978.04	15.85	10.48	9.79



V09.04.02

SURVEY CALCULATION PROGRAM

1/16/18 14:49

Company:	Matador Production Company
Well Name:	Michael Collins 11 23S 27E RB 206H
Location:	Eddy County, NM
Rig:	Patterson #297
Job Number:	DDMO-171153
API #:	30-015-44472

Magnetic Declination: 7.16

REFERENCED TO GRID NORTH

Proposed Direction: 281.54

Minimum Curvature

#	Survey Calculation Method:			Minimum Curvature			Surface Vert Sec			Closure			DLS/		VS
	Depth Feet	Inc Degrees	Azm Degrees	INC	AZM	TVD Feet	E/W Feet	TVD Feet	N/S Feet	Surface Vert Sec	Distance	Azm	100'	BUR/ 100'	
PTB:	14,209	MD	14,209	85.7	278.2	9134.78	1099.8	9134.78	1099.8	-4719.67	4844.28				
68	9,098	32.20	309.60	8955.29	955.84	249.30	-53.04	249.30	955.84	987.81	14.62	10.69	10.69	10.64	
69	9,144	36.90	306.40	8993.17	971.86	228.72	-29.68	228.72	971.86	998.41	13.24	10.95	10.95	10.22	
70	9,191	42.60	303.30	9029.29	988.98	204.05	-2.08	204.05	988.98	1009.81	11.66	12.84	12.84	12.13	
71	9,238	47.10	297.10	9062.62	1005.57	175.40	29.31	175.40	1005.57	1020.75	9.89	13.34	13.34	9.57	
72	9,285	52.40	291.20	9092.99	1020.16	142.68	64.29	142.68	1020.16	1030.09	7.96	14.79	14.79	11.28	
73	9,331	57.40	287.30	9119.44	1032.53	107.16	101.57	107.16	1032.53	1038.07	5.92	12.89	12.89	10.87	
74	9,378	62.50	282.10	9142.98	1042.79	67.83	142.16	67.83	1042.79	1045.00	3.72	14.47	14.47	10.85	
75	9,425	66.50	277.30	9163.22	1049.91	26.03	184.53	26.03	1049.91	1050.23	1.42	12.54	12.54	8.51	
76	9,472	68.30	271.20	9181.30	1053.11	-17.21	227.54	-17.21	1053.11	1053.25	359.06	12.58	12.58	3.83	
77	9,519	69.60	265.20	9198.19	1051.72	-61.03	270.19	-61.03	1051.72	1053.49	356.68	12.23	12.23	2.77	
78	9,547	72.20	263.30	9207.36	1049.07	-87.35	295.45	-87.35	1049.07	1052.70	355.24	11.28	11.28	9.29	
79	9,604	77.00	263.70	9222.49	1042.85	-141.93	347.69	-141.93	1042.85	1052.46	352.25	8.45	8.45	8.42	
80	9,651	81.40	263.30	9231.29	1037.62	-187.79	391.58	-187.79	1037.62	1054.48	349.74	9.40	9.40	9.36	
81	9,698	87.20	261.60	9235.96	1031.48	-234.13	435.75	-234.13	1031.48	1057.72	347.21	12.85	12.85	12.34	
82	9,745	91.60	261.10	9236.45	1024.41	-280.58	479.85	-280.58	1024.41	1062.14	344.68	9.42	9.42	9.36	
83	9,793	92.90	261.00	9234.57	1016.95	-327.96	524.78	-327.96	1016.95	1068.52	342.13	2.72	2.72	2.71	
84	9,888	93.80	262.30	9229.01	1003.18	-421.79	613.95	-421.79	1003.18	1088.24	337.20	1.66	1.66	0.95	
85	9,982	92.30	265.30	9224.01	993.04	-515.10	703.34	-515.10	993.04	1118.69	332.58	3.56	3.56	-1.60	
86	10,077	91.70	265.40	9220.70	985.35	-609.73	794.52	-609.73	985.35	1158.74	328.25	0.64	0.64	-0.63	
87	10,172	90.70	266.70	9218.71	978.80	-704.48	886.05	-704.48	978.80	1205.96	324.26	1.73	1.73	-1.05	
88	10,266	90.40	266.60	9217.80	973.31	-798.31	976.89	-798.31	973.31	1258.82	320.64	0.34	0.34	-0.32	
89	10,361	92.30	267.90	9215.57	968.75	-893.17	1068.91	-893.17	968.75	1317.66	317.32	2.42	2.42	2.00	
90	10,455	92.50	268.60	9211.63	965.89	-987.04	1160.32	-987.04	965.89	1381.01	314.38	0.77	0.77	0.21	
91	10,550	91.40	267.70	9208.40	962.82	-1081.93	1252.68	-1081.93	962.82	1448.31	311.67	1.50	1.50	-1.16	
92	10,645	93.30	269.30	9204.50	960.34	-1176.81	1345.14	-1176.81	960.34	1518.93	309.22	2.61	2.61	2.00	
93	10,740	93.50	269.80	9198.87	959.59	-1271.64	1437.91	-1271.64	959.59	1593.08	307.04	0.57	0.57	0.21	
94	10,835	93.50	269.50	9193.07	959.01	-1366.47	1530.69	-1366.47	959.01	1669.41	305.06	0.32	0.32	0.00	
95	10,929	94.10	270.00	9186.84	958.60	-1460.26	1622.51	-1460.26	958.60	1746.79	303.28	0.83	0.83	0.64	
96	11,024	91.70	269.80	9182.03	958.44	-1555.13	1715.43	-1555.13	958.44	1826.75	301.65	2.54	2.54	-2.53	
97	11,118	91.60	269.60	9179.33	957.94	-1649.09	1807.39	-1649.09	957.94	1907.13	300.15	0.24	0.24	-0.11	
98	11,211	92.00	269.60	9176.40	957.30	-1742.04	1898.33	-1742.04	957.30	1987.74	298.79	0.43	0.43	0.43	
99	11,305	93.30	270.20	9172.06	957.13	-1835.94	1990.30	-1835.94	957.13	2070.45	297.53	1.52	1.52	1.38	
100	11,399	92.70	270.60	9167.14	957.79	-1929.80	2082.40	-1929.80	957.79	2154.41	296.40	0.77	0.77	-0.64	
101	11,494	91.40	269.90	9163.74	958.20	-2024.74	2175.50	-2024.74	958.20	2240.03	295.33	1.55	1.55	-1.37	



SURVEY CALCULATION PROGRAM

1/16/18 14:49

Company: Matador Production Company
Well Name: Michael Collins 11 23S 27E RB 206H
Location: Eddy County, NM
Rig: Patterson #297
Job Number: DDMO-171153
API #: 30-015-44472

Magnetic Declination: 7.16

REFERENCED TO GRID NORTH

Proposed Direction: 281.54

Vertical Section Azimuth: 281.54

Survey Calculation Method:		Minimum Curvature		N/S		E/W		Closure		DLS/		VS	
PTB:	MD	INC	AZM	Feet	Feet	Feet	Feet	Distance	Azm	100'	100'	4844.28	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Distance	Azm	100'	100'	4844.28	
102	11,588	88.80	269.20	9163.58	957.46	-2118.73	2267.44	2325.03	294.32	2.86	-2.77		
103	11,682	89.80	267.10	9164.73	954.43	-2212.67	2358.87	2409.74	293.33	2.47	1.06		
104	11,776	95.70	267.70	9160.22	950.17	-2306.42	2449.88	2494.47	292.39	6.31	6.28		
105	11,870	94.00	268.00	9152.27	946.66	-2400.01	2540.88	2579.97	291.53	1.84	-1.81		
106	11,965	92.30	266.40	9147.05	942.02	-2494.75	2632.77	2666.68	290.69	2.46	-1.79		
107	12,058	93.60	267.90	9142.26	937.40	-2587.51	2722.73	2752.08	289.91	2.13	1.40		
108	12,153	94.60	267.60	9135.47	933.68	-2682.19	2814.76	2840.05	289.19	1.10	1.05		
109	12,247	93.70	270.40	9128.67	932.05	-2775.92	2906.26	2928.21	288.56	3.12	-0.96		
110	12,341	93.40	270.10	9122.85	932.46	-2869.74	2998.27	3017.43	288.00	0.45	-0.32		
111	12,435	93.70	271.10	9117.03	933.44	-2963.55	3090.38	3107.08	287.48	1.11	0.32		
112	12,529	90.70	270.30	9113.42	934.59	-3057.46	3182.62	3197.11	287.00	3.30	-3.19		
113	12,623	90.90	269.00	9112.11	934.01	-3151.45	3274.59	3286.95	286.51	1.40	0.21		
114	12,717	90.10	271.20	9111.29	934.18	-3245.44	3366.72	3377.21	286.06	2.49	-0.85		
115	12,812	88.90	270.20	9112.11	935.34	-3340.43	3460.02	3468.90	285.64	1.64	-1.26		
116	12,905	94.00	271.50	9109.76	936.71	-3433.35	3551.34	3558.84	285.26	5.66	5.48		
117	12,999	92.70	271.20	9104.27	938.93	-3527.16	3643.70	3650.00	284.91	1.42	-1.38		
118	13,093	92.20	270.20	9100.25	940.07	-3621.07	3735.93	3741.11	284.55	1.19	-0.53		
119	13,187	91.80	270.50	9096.97	940.65	-3715.01	3828.09	3832.25	284.21	0.53	-0.43		
120	13,281	89.90	270.70	9095.58	941.63	-3808.99	3920.37	3923.66	283.89	2.03	-2.02		
121	13,375	91.10	274.90	9094.76	946.22	-3902.85	4013.25	4015.92	283.63	4.65	1.28		
122	13,469	92.00	280.00	9092.21	958.40	-3995.99	4106.94	4109.32	283.49	5.51	0.96		
123	13,564	91.60	284.30	9089.23	978.38	-4088.80	4201.87	4204.22	283.46	4.54	-0.42		
124	13,657	86.40	286.70	9090.85	1003.22	-4178.36	4294.60	4297.11	283.50	6.16	-5.59		
125	13,751	84.20	281.60	9098.55	1026.12	-4269.17	4388.14	4390.75	283.51	5.89	-2.34		
126	13,845	85.40	280.10	9107.07	1043.74	-4361.10	4481.75	4484.26	283.46	2.04	1.28		
127	13,939	85.70	279.50	9114.37	1059.69	-4453.45	4575.42	4577.79	283.38	0.71	0.32		
128	14,034	85.60	278.60	9121.57	1074.59	-4547.00	4670.06	4672.25	283.30	0.95	-0.11		
129	14,128	85.70	278.20	9128.70	1088.28	-4639.72	4763.64	4765.64	283.20	0.44	0.11		
PTB:	14,209	85.70	278.20	9134.78	1099.80	-4719.67	4844.28	4846.11	283.12	0.00	0.00		