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Survey Company: MS Energy Services
MWD Surveyor Name: Randall Nesloney
Survey Type: MWD
Operating Company: Murchison Oil & Gas, Inc.
Well Name & Number: Jawbone State COM 003H
API Number: 30-015-43985
Surveyed Depths: 384' – 11,678' MD

Dates Performed: 03/23/2017 – 04/04/2017
Location: Eddy County, NM

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: 2017-04-21

Email: rnesloney@msenergyservices.com

NM OIL CONSERVATION
ARTESIA DISTRICT

APR 28 2017

RECEIVED

SURVEY CALCULATION PROGRAM

4/20/17 10:36

V09.04.02

Company:		Murchison Oil & Gas, Inc.	
Well Name:		Jawbone State COM 003H	
Location:		Eddy County, NM	
Rig:		Nabors M55	
Job Number:		DDMO-170286	
API #:		30-015-43985	
Vertical Section Azimuth:		181.14	
Survey Calculation Method:		Minimum Curvature	
PTB:		AZM	
MD		INC	
11.810		91.3	
Depth		TVD	
Feet		Feet	
#		N/S	
TIE IN		Feet	
1		2.54	
2		3.79	
3		4.58	
4		5.20	
5		5.90	
6		6.54	
7		7.05	
8		7.59	
9		8.37	
10		9.36	
11		9.75	
12		9.43	
13		8.57	
14		7.20	
15		5.80	
16		4.61	
17		3.59	
18		2.72	
19		2.03	
20		1.40	
21		0.84	
22		0.34	
23		-0.24	
24		-0.74	
25		-1.18	
26		-1.74	
27		-2.43	
28		-3.17	
29		-4.08	
30		-5.15	
31		-6.28	
32		-7.47	
33		-8.65	

REFERENCED TO GRID NORTH

Proposed Direction: 181.14

TVD 7/35.19

EW 4897.28

N/S Surface Vert Sec

Distance 1.69

EW 8.85

Closure -95.6

DLS/ 4898.21

BUR/ 100'

0.12 0.11

0.05 0.00

0.32 -0.21

0.07 0.00

0.30 0.21

0.21 -0.21

0.26 0.10

0.21 0.10

0.28 0.21

0.02 0.63

0.78 0.00

0.43 0.42

0.65 -0.11

0.33 0.31

0.35 0.32

0.30 -0.21

0.35 -0.31

0.25 -0.21

0.04 0.00

0.02 0.00

2.43 -0.42

0.11 0.11

0.06 0.00

0.15 0.00

0.10 0.10

0.12 0.00

0.07 0.00

0.02 0.00

0.23 0.11

0.02 0.00

0.08 0.00

0.05 0.00

0.08 0.00

008.04.02

Company:		Murchison Oil & Gas, Inc.									
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Job Number:		DDMO-170286									
API #:		30-015-43985									
Vertical Section Azimuth:		181.14									
Survey Calculation Method:		Minimum Curvature									
PTB:	MD	INC		AZM		TVD	N/S		E/W		VS
	11.810	91.3		181.8		7135.19	-4897.28		-95.6		4898.21
#	Depth	Inc	Azm	TVD	N/S	EW	Surface	Closure	DLS/	BUR/	
	Feet	Degrees	Degrees	Feet	Feet	Feet	Vert Sec	Distance	Azm	100'	
34	3,550	1.40	245.80	3549.29	-9.71	0.87	9.69	9.74	174.90	0.21	
35	3,645	1.40	243.20	3644.26	-10.70	-1.23	10.73	10.78	186.54	0.07	
36	3,740	1.30	247.00	3739.24	-11.65	-3.26	11.71	12.10	195.61	0.14	
37	3,835	1.30	247.90	3834.21	-12.48	-5.25	12.58	13.53	202.81	0.02	
38	3,930	1.30	244.40	3929.19	-13.35	-7.22	13.49	15.17	208.40	0.08	
39	4,025	1.00	96.50	4024.18	-13.91	-7.36	14.05	15.74	207.90	2.33	
40	4,120	1.20	102.30	4119.16	-14.21	-5.57	14.32	15.26	201.40	0.24	
41	4,215	1.30	109.60	4214.14	-14.79	-3.58	14.85	15.21	193.62	0.20	
42	4,310	1.30	100.60	4309.12	-15.35	-1.51	15.37	15.42	185.61	0.21	
43	4,405	1.20	96.60	4404.09	-15.66	0.54	15.64	15.67	178.02	0.14	
44	4,500	1.30	97.50	4499.07	-15.91	2.60	15.86	16.12	170.73	0.11	
45	4,595	1.30	101.00	4594.05	-16.26	4.72	16.16	16.93	163.80	0.08	
46	4,690	1.40	95.70	4689.02	-16.58	6.94	16.44	17.97	157.30	0.17	
47	4,785	1.40	16.10	4784.00	-15.58	8.41	15.41	17.71	151.63	1.89	
48	4,880	1.30	12.90	4878.97	-13.41	8.97	13.23	16.14	146.22	0.13	
49	4,976	1.30	14.40	4974.95	-11.30	9.49	11.11	14.75	139.98	0.04	
50	5,071	1.20	21.90	5069.93	-9.33	10.13	9.13	13.77	132.66	0.20	
51	5,166	1.00	20.20	5164.91	-7.63	10.79	7.41	13.21	125.28	0.21	
52	5,262	1.00	26.20	5260.89	-6.09	11.44	5.86	12.97	118.03	0.11	
53	5,357	0.90	37.60	5355.88	-4.76	12.27	4.51	13.16	111.20	0.22	
54	5,452	3.10	12.90	5450.82	-1.66	13.29	1.40	13.40	97.13	2.43	
55	5,548	4.40	8.70	5546.61	4.51	14.43	-4.79	15.12	72.65	1.38	
56	5,643	5.30	359.40	5641.27	12.50	14.94	-12.79	19.48	50.08	1.26	
57	5,738	6.60	349.20	5735.76	22.25	13.87	-22.52	26.22	31.93	1.76	
58	5,833	8.00	347.10	5829.99	34.06	11.37	-34.28	35.90	18.46	1.50	
59	5,928	9.30	349.30	5923.90	48.04	8.47	-48.20	48.78	9.99	1.41	
60	6,023	11.20	349.70	6017.38	64.67	5.39	-64.76	64.89	4.77	2.00	
61	6,118	12.80	350.10	6110.31	84.11	1.93	-84.13	84.13	1.32	1.69	
62	6,200	16.30	351.10	6189.66	104.43	-1.41	-104.39	104.44	359.23	4.28	
63	6,251	16.30	351.10	6238.61	118.58	-3.63	-118.48	118.63	358.25	0.00	
64	6,298	15.50	350.60	6283.82	131.29	-5.67	-131.15	131.41	357.53	1.73	
65	6,347	8.70	356.60	6331.70	141.46	-6.96	-141.29	141.63	357.18	14.09	
66	6,394	1.10	351.90	6378.49	145.46	-7.24	-145.29	145.64	357.15	16.18	
67	6,442	5.90	199.90	6426.42	143.59	-8.14	-143.40	143.82	356.75	14.36	

009.04.02

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Rig:		Nabors M55									
Job Number:		DDMO-170286									
API #:		30-015-43985									
Vertical Section Azimuth:		181.14									
Survey Calculation Method:		Minimum Curvature									
PTB:	MD	INC		AZM		TVD		N/S		VS	
	11,810	91.3		181.8		7135.19		-4897.28		4898.21	
#	Depth	Inc	Azm	TVD	N/S	E/W	Surface	Distance	Closure	DLS/	BUR/
	Feet	Degrees	Degrees	Feet	Feet	Feet	Vert Sec	Feet	Azm	100'	100'
68	6,489	12.00	191.80	6472.83	136.53	-9.97	-136.31	136.90	355.83	13.22	12.98
69	6,537	16.30	186.40	6519.36	124.95	-11.74	-124.69	125.50	354.63	9.36	8.96
70	6,584	21.20	182.10	6563.86	109.89	-12.79	-109.62	110.63	353.36	10.83	10.43
71	6,632	25.70	180.60	6607.88	90.80	-13.21	-90.52	91.76	351.72	9.46	9.38
72	6,679	28.90	180.60	6649.64	69.25	-13.44	-68.97	70.54	349.02	6.81	6.81
73	6,726	29.50	180.90	6690.67	46.32	-13.74	-46.04	48.32	343.48	1.31	1.28
74	6,773	31.10	179.80	6731.25	22.61	-13.88	-22.33	26.53	328.46	3.60	3.40
75	6,822	35.20	178.70	6772.26	-4.17	-13.51	4.44	14.14	252.83	8.46	8.37
76	6,869	39.50	178.10	6809.62	-32.67	-12.71	32.92	35.06	201.26	9.18	9.15
77	6,917	44.50	178.00	6845.28	-64.76	-11.62	64.98	65.79	190.17	10.42	10.42
78	6,964	47.40	178.60	6877.95	-98.52	-10.62	98.71	99.09	186.15	6.24	6.17
79	7,012	50.80	179.20	6909.37	-134.79	-9.93	134.96	135.16	184.21	7.15	7.08
80	7,059	55.10	179.90	6937.69	-172.29	-9.64	172.45	172.56	183.20	9.23	9.15
81	7,107	60.90	180.50	6963.11	-212.98	-9.79	213.13	213.20	182.63	12.13	12.08
82	7,154	64.60	181.30	6984.63	-254.75	-10.45	254.91	254.96	182.35	8.02	7.87
83	7,202	69.40	182.30	7003.38	-298.90	-11.84	299.08	299.13	182.27	10.18	10.00
84	7,249	72.20	182.70	7018.83	-343.24	-13.78	343.44	343.51	182.30	6.01	5.96
85	7,297	75.90	182.50	7032.02	-389.33	-15.87	389.57	389.66	182.33	7.72	7.71
86	7,344	79.50	181.90	7042.03	-435.21	-17.63	435.48	435.57	182.32	7.76	7.66
87	7,392	82.60	182.00	7049.50	-482.60	-19.25	482.88	482.98	182.28	6.46	6.46
88	7,439	85.90	182.10	7054.21	-529.32	-20.92	529.63	529.74	182.26	7.02	7.02
89	7,487	87.60	181.20	7056.93	-577.22	-22.30	577.55	577.65	182.21	4.01	3.54
90	7,532	88.10	180.60	7060.49	-672.14	-23.79	672.49	672.57	182.03	0.82	0.53
91	7,578	88.80	181.00	7063.09	-768.10	-25.13	768.45	768.51	181.87	0.84	0.73
92	7,774	90.10	181.20	7064.01	-864.08	-26.97	864.44	864.50	181.79	1.37	1.35
93	7,869	87.80	179.50	7065.75	-959.05	-27.55	959.41	959.44	181.65	3.01	-2.42
94	7,964	88.10	179.60	7069.15	-1053.98	-26.81	1054.31	1054.32	181.46	0.33	0.32
95	8,059	87.70	180.10	7072.63	-1148.92	-26.56	1149.22	1149.23	181.32	0.67	-0.42
96	8,154	87.10	180.60	7076.94	-1243.82	-27.14	1244.11	1244.12	181.25	0.82	-0.63
97	8,250	88.80	181.30	7080.37	-1339.74	-28.73	1340.05	1340.05	181.23	1.91	1.77
98	8,345	88.60	181.30	7082.53	-1434.69	-30.88	1435.02	1435.02	181.23	0.21	-0.21
99	8,440	88.20	180.60	7085.18	-1529.64	-32.46	1529.98	1529.98	181.22	0.85	-0.42
100	8,536	88.40	180.50	7088.03	-1625.59	-33.38	1625.94	1625.94	181.18	0.23	0.21
101	8,631	88.40	180.40	7090.68	-1720.55	-34.13	1720.89	1720.89	181.14	0.11	0.00

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REFERENCED TO GRID NORTH





SURVEY CALCULATION PROGRAM

4/20/17 10:36

W09.04.02

Company: Murchison Oil & Gas, Inc.

Well Name: Jawbone State COM 003H

Location: Eddy County, NM

Rig: Nabors M55

Job Number: DDMO-170286

API #: 30-015-43985

Vertical Section Azimuth: 181.14

Survey Calculation Method: Minimum Curvature

PTB: MD 11.810 INC 91.3

Depth Feet Inc Degrees Azm Degrees TVD Feet N/S Feet

102 8,728 88.30 180.30 7093.48 -1817.51 -34.72 1817.84 1817.84 181.09 0.15 -0.10

103 8,823 89.60 180.30 7095.22 -1912.49 -35.22 1912.81 1912.82 181.05 1.37 1.37

104 8,918 91.50 179.90 7094.31 -2007.48 -35.38 2007.79 2007.80 181.01 2.04 2.00

105 9,013 89.90 180.80 7093.14 -2102.47 -35.96 2102.77 2102.78 180.98 1.93 -1.68

106 9,109 91.50 181.00 7091.97 -2198.45 -37.47 2198.76 2198.77 180.98 1.68 1.67

107 9,203 89.30 181.20 7091.32 -2292.42 -39.27 2292.75 2292.76 180.98 2.35 -2.34

108 9,299 87.90 182.00 7093.66 -2388.35 -41.95 2388.72 2388.72 181.01 1.68 -1.46

109 9,394 88.60 182.00 7096.56 -2483.25 -45.27 2483.66 2483.66 181.04 0.74 0.74

110 9,489 89.90 182.00 7097.81 -2578.18 -48.58 2578.64 2578.64 181.08 1.37 1.37

111 9,584 88.10 182.10 7099.46 -2673.10 -51.98 2673.61 2673.61 181.11 1.90 -1.89

112 9,679 89.30 182.00 7101.62 -2768.02 -55.38 2768.57 2768.57 181.15 1.27 1.26

113 9,775 87.00 182.40 7104.72 -2863.89 -59.06 2864.50 2864.50 181.18 2.43 -2.40

114 9,870 87.70 182.60 7109.11 -2958.70 -63.20 2959.37 2959.37 181.22 0.77 0.74

115 9,965 88.90 182.70 7111.93 -3053.55 -67.59 3054.29 3054.30 181.27 1.27 1.26

116 10,060 90.60 183.10 7112.34 -3148.43 -72.40 3149.24 3149.26 181.32 1.84 1.79

117 10,155 89.20 183.10 7112.51 -3243.28 -77.53 3244.18 3244.21 181.37 1.47 -1.47

118 10,251 87.20 181.70 7115.52 -3339.14 -81.55 3340.11 3340.14 181.40 2.54 -2.08

119 10,346 87.70 182.00 7119.75 -3434.00 -84.62 3435.00 3435.04 181.41 0.61 0.53

120 10,442 88.60 182.40 7122.85 -3529.88 -88.30 3530.94 3530.98 181.43 1.03 0.94

121 10,537 87.30 180.30 7126.25 -3624.78 -90.54 3625.87 3625.92 181.43 2.60 -1.37

122 10,632 88.20 180.60 7129.98 -3719.71 -91.28 3720.79 3720.83 181.41 1.00 0.95

123 10,728 89.20 180.50 7132.16 -3815.68 -92.20 3816.76 3816.79 181.38 1.05 1.04

124 10,822 87.70 178.90 7134.70 -3909.64 -91.71 3910.69 3910.71 181.34 2.33 -1.60

125 10,917 88.80 178.90 7137.60 -4004.57 -89.89 4005.57 4005.58 181.29 1.16 1.16

126 11,012 89.90 178.90 7138.68 -4099.55 -88.07 4100.49 4100.49 181.23 1.16 1.16

127 11,107 90.80 179.10 7138.10 -4194.53 -86.41 4195.42 4195.42 181.18 0.97 0.95

128 11,203 88.10 179.80 7139.02 -4290.51 -85.49 4291.36 4291.36 181.14 2.91 -2.81

129 11,298 89.00 180.20 7141.42 -4385.48 -85.49 4386.31 4386.31 181.12 1.04 0.95

130 11,393 90.20 180.40 7142.09 -4480.47 -85.98 4481.30 4481.30 181.10 1.28 1.26

131 11,488 91.50 180.50 7140.68 -4575.46 -86.73 4576.28 4576.28 181.09 1.37 1.37

132 11,583 90.10 181.70 7139.35 -4670.43 -88.55 4671.27 4671.27 181.09 1.94 -1.47

133 11,678 91.30 181.80 7138.19 -4765.38 -91.45 4766.25 4766.25 181.10 1.27 1.26