



7821 Will Rogers Blvd.
Fort Worth, Texas 76140

817.568.1038 (office)
817.568.1499 (fax)
www.msenergyservices.com

HOBBS OGD
OCT 19 2015
RECEIVED

State of Texas

County of Tarrant

I, ANTHONY ZACCARDO, certify that; I am employed by MS Energy Services;
that I did on the day(s) of 8/15/15 through 9/13/15 conduct or supervise
the taking of MWD survey(s) from a depth of 1.321 feet to a depth of 15.647
feet; that the data is true, correct, complete and within the limitations of the tool set forth by MS Energy
Services; that I am authorized and qualified to make this report; that this survey(s) was / were
conducted at the request of MURCHISON OIL & GAS, INC.
for the JACKSON UNIT 30H, API No. 30-025-42652
in LEA county Parish, NEW MEXICO; and that I have
reviewed this report and find that it conforms to the principles and procedures as set forth by
MS Energy Services.

Signature: Anthony Zaccardo
Title: MWD Specialist

MS Directional

MS Guidance

MS Survey

MS Wireline

DEC 14 2015

jm



SURVEY CALCULATION PROGRAM

10/1/15 14:48

Company:		Murchison Oil & Gas, Inc.									
Well Name:		Jackson Unit 30H									
Location:		Lea County, NM									
Rig:		Cactus #136									
Job Number:		DDMO-150490									
API #:		30-025-42652									
Vertical Section Azimuth:		14.79									
Survey Calculation Method:		Minimum Curvature									
PTB:	MD	INC		AZM		TVD		E/W		N/S	
	15.695	95.2		1.3		10864.6		4751.92		1248.64	
Proposed Direction:		14.79									
Magnetic Declination:		6.84									
Vertical Section Azimuth:		14.79									
Survey Calculation Method:		Minimum Curvature									
#	Depth	Inc		Azim		TVD		E/W		N/S	
	Feet	Degrees		Degrees		Feet		Feet		Vert Sec	
Distance		Closure		Azim		DLS/		BUR/		VS	
100'		100'		100'		100'		100'		100'	
TIE IN		1.60		122.84		1229.45		-15.45		20.83	
1		1.30		114.80		1320.42		-16.57		22.83	
2		1.10		112.60		1411.40		-17.34		24.58	
3		0.90		119.10		1502.39		-18.02		26.01	
4		0.60		123.30		1596.38		-18.65		27.07	
5		0.40		116.90		1690.38		-19.07		27.77	
6		0.50		153.60		1785.37		-19.59		28.25	
7		0.40		170.20		1878.37		-20.28		28.48	
8		0.10		219.60		1973.37		-20.67		28.49	
9		0.20		243.10		2067.37		-20.80		28.29	
10		0.20		271.20		2161.37		-20.88		27.98	
11		0.70		275.30		2257.36		-20.82		27.23	
12		0.70		265.10		2352.36		-20.81		26.07	
13		1.10		273.10		2446.35		-20.81		24.60	
14		1.20		278.80		2542.33		-20.61		22.69	
15		1.50		292.40		2634.30		-20.00		20.62	
16		1.70		291.20		2728.26		-19.03		18.18	
17		2.00		279.10		2824.21		-18.25		15.20	
18		1.50		268.20		2919.17		-18.03		12.32	
19		0.50		241.60		3015.15		-18.27		10.70	
20		0.70		242.10		3110.15		-18.74		9.82	
21		0.80		265.20		3205.14		-19.06		8.65	
22		0.70		287.30		3300.13		-18.95		7.43	
23		0.60		302.30		3394.13		-18.51		6.47	
24		0.60		283.90		3489.12		-18.13		5.56	
25		1.30		260.50		3583.11		-18.18		4.03	
26		1.70		258.60		3678.08		-18.64		1.59	
27		2.30		249.60		3773.02		-19.58		-1.58	
28		2.60		235.90		3867.93		-21.46		-5.15	
29		1.50		239.50		3962.87		-23.30		-8.01	
30		1.50		240.10		4057.84		-24.55		-10.15	
31		2.10		227.50		4151.79		-26.32		-12.49	

V09.04.02

Company: Murchison Oil & Gas, Inc.

Well Name: Jackson Unit 30H

Location: Lea County, NM

Rig: Cactus #136

Job Number: DDMO-150490

API #: 30-025-42652

Vertical Section Azimuth:

14.79

Proposed Direction:

14.79

Magnetic Declination:

6.84

REFERENCED TO GRID NORTH

Survey Calculation Method:

Minimum Curvature

PTB:	MD	INC	INC	TVD	AZM	TVD	E/W	N/S	Surface	Distance	E/W	VS
	15.695		95.2		1.3	10864.6	4751.92		1248.64		4913.23	

#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	TVD Feet	E/W Feet	Vert Sec	Distance	Closure Azim	DLS/ 100'	BUR/ 100'
32	4.246	2.20	220.30	4244.73	-28.84	-14.90	-31.68	32.46	207.33	0.31	0.11	
33	4.340	2.20	187.90	4338.66	-32.00	-16.32	-35.10	35.92	207.02	1.31	0.00	
34	4.435	1.60	170.40	4433.61	-35.11	-16.35	-38.12	38.73	204.96	0.87	-0.63	
35	4.529	2.00	167.90	4527.56	-38.01	-15.78	-40.78	41.16	202.55	0.43	0.43	
36	4.624	1.40	159.60	4622.52	-40.72	-15.03	-43.21	43.40	200.26	0.68	-0.63	
37	4.718	2.40	149.90	4716.47	-43.50	-13.64	-45.54	45.59	197.41	1.11	1.06	
38	4.812	3.80	135.20	4810.33	-47.41	-10.46	-48.51	48.55	192.44	1.70	1.49	
39	4.906	3.40	139.50	4904.14	-51.74	-6.46	-51.68	52.14	187.11	0.51	-0.43	
40	5.000	2.20	145.90	4998.03	-55.35	-3.63	-54.45	55.47	183.76	1.32	-1.28	
41	5.071	1.70	134.50	5068.99	-57.22	-2.12	-55.87	57.26	182.12	0.89	-0.70	
42	5.216	1.50	135.90	5213.93	-60.09	0.74	-57.91	60.10	179.30	0.14	-0.14	
43	5.309	5.60	93.10	5306.74	-61.21	6.12	-57.62	61.52	174.29	4.96	4.41	
44	5.404	7.30	85.20	5401.14	-60.96	16.76	-54.66	63.22	164.63	2.01	1.79	
45	5.498	7.70	86.60	5494.34	-60.08	29.00	-50.69	66.72	154.24	0.47	0.43	
46	5.592	9.10	93.10	5587.33	-60.11	42.71	-47.22	73.74	144.61	1.80	1.49	
47	5.686	11.10	94.30	5679.87	-61.19	59.15	-44.07	85.11	135.97	2.14	2.13	
48	5.780	12.60	91.10	5771.86	-62.07	78.43	-39.99	100.02	128.36	1.74	1.60	
49	5.874	13.00	91.00	5863.53	-62.45	99.25	-35.04	117.26	122.18	0.43	0.43	
50	5.969	13.00	91.40	5956.09	-62.90	120.62	-30.02	136.03	117.54	0.09	0.00	
51	6.063	12.40	91.40	6047.79	-63.40	141.28	-25.24	154.85	114.17	0.64	-0.64	
52	6.158	12.00	93.60	6140.65	-64.27	161.33	-20.96	173.66	111.72	0.65	-0.42	
53	6.252	12.60	96.60	6232.49	-66.06	181.27	-17.60	192.93	110.02	0.93	0.64	
54	6.346	12.70	96.80	6324.21	-68.47	201.71	-14.70	213.02	108.75	0.12	0.11	
55	6.440	12.30	96.00	6415.98	-70.74	221.93	-11.74	232.93	107.68	0.46	-0.43	
56	6.534	12.30	96.00	6507.82	-72.83	241.85	-8.68	252.57	106.76	0.00	0.00	
57	6.628	12.70	95.30	6599.59	-74.83	262.09	-5.44	272.56	105.93	0.46	0.43	
58	6.723	12.50	96.80	6692.30	-77.01	282.70	-2.29	293.00	105.24	0.40	-0.21	
59	6.816	12.20	95.60	6783.15	-79.16	302.47	0.67	312.66	104.67	0.42	-0.32	
60	6.911	12.40	96.60	6875.97	-81.31	322.59	3.73	332.68	104.15	0.31	0.21	
61	7.004	12.10	94.20	6966.85	-83.18	342.23	6.94	352.20	103.66	0.64	-0.32	
62	7.099	13.10	94.20	7059.57	-84.69	362.90	10.75	372.65	103.14	1.05	1.05	
63	7.194	13.20	93.90	7152.07	-86.22	384.46	14.78	394.01	102.64	0.13	0.11	
64	7.289	13.10	95.40	7244.58	-87.97	406.00	18.59	415.42	102.23	0.37	-0.11	

NOV 04 02

Company: Murchison Oil & Gas, Inc.

Well Name: Jackson Unit 30H

Location: Lea County, NM

Rig: Cactus #136

Job Number: DDMO-150490

API #: 30-025-42652

Vertical Section Azimuth:

14.79

Proposed Direction:

14.79

Survey Calculation Method:

Minimum Curvature

Magnetic Declination:

6.84

REFERENCED TO GRID NORTH

VS

4913.23

DLS/ BUR/

100' 100'

PTB: MD 15.695 INC 95.2 AZM 1.3

TVD 10864.6 E/W 4751.92 N/S 4571.92

E/W 1248.64 Closure 101.85

Distance 436.77

Azim 101.85

DLS/ BUR/

100' 100'

Depth Feet Inc Degrees Azm Degrees TVD Feet N/S Feet E/W Feet Surface Vert Sec Distance Closure Azim DLS/ BUR/

65 7,384 13.10 93.90 7337.11 -89.72 427.46 22.38 436.77 101.85 0.36 0.00

66 7,478 13.00 94.60 7428.68 -91.29 448.63 26.26 457.82 101.50 0.20 -0.11

67 7,573 13.00 93.80 7521.25 -92.85 469.94 30.19 479.02 101.18 0.19 0.00

68 7,668 12.60 93.30 7613.89 -94.16 490.95 34.29 499.89 100.86 0.44 -0.42

69 7,763 13.70 99.00 7706.40 -96.51 512.40 37.49 521.41 100.67 1.79 1.16

70 7,858 13.30 99.70 7798.77 -100.12 534.29 39.59 543.58 100.61 0.45 -0.42

71 7,952 12.80 99.80 7890.35 -103.71 555.20 41.46 564.81 100.58 0.53 -0.53

72 8,046 12.90 94.20 7982.00 -106.25 575.93 44.29 585.65 100.45 1.33 0.11

73 8,141 13.10 93.50 8074.56 -107.68 597.25 48.35 606.88 100.22 0.27 0.21

74 8,235 12.40 94.40 8166.24 -109.11 617.95 52.25 627.51 100.01 0.77 -0.74

75 8,329 12.10 94.80 8258.10 -110.71 637.83 55.78 647.36 99.85 0.33 -0.32

76 8,422 12.80 95.40 8348.92 -112.49 657.80 59.15 667.35 99.70 0.77 0.75

77 8,517 12.70 96.80 8441.57 -114.72 678.64 62.32 688.27 99.59 0.34 -0.11

78 8,612 14.40 97.20 8533.93 -117.44 700.73 65.33 710.51 99.51 1.79 1.79

79 8,706 14.20 99.20 8625.01 -120.75 723.71 68.00 733.72 99.47 0.57 -0.21

80 8,799 13.80 99.20 8715.25 -124.34 745.92 70.19 756.21 99.46 0.43 -0.43

81 8,893 13.20 98.60 8806.65 -127.74 767.60 72.44 778.16 99.45 0.66 -0.64

82 8,988 13.10 100.50 8899.16 -131.32 788.91 74.42 799.77 99.45 0.47 0.47

83 9,082 12.40 100.70 8990.84 -135.14 809.30 75.93 820.51 99.48 0.75 -0.74

84 9,176 12.60 99.80 9082.62 -138.76 829.32 77.55 840.85 99.50 0.30 0.21

85 9,272 11.80 100.20 9176.45 -142.28 849.30 79.24 861.14 99.51 0.84 -0.83

86 9,366 11.30 91.90 9268.55 -144.29 867.97 82.07 879.88 99.44 1.84 -0.53

87 9,460 11.70 94.10 9360.66 -145.27 886.68 85.89 898.50 99.30 0.63 0.43

88 9,554 13.10 99.80 9452.47 -147.77 906.68 88.58 918.65 99.26 1.98 1.49

89 9,649 13.50 103.70 9544.93 -152.23 928.07 89.73 940.47 99.32 1.03 0.42

90 9,743 13.20 105.20 9636.39 -157.64 949.08 89.86 962.09 99.43 0.49 -0.32

91 9,884 12.00 99.30 9773.99 -164.23 979.09 91.15 992.76 99.52 1.25 -0.85

92 9,979 9.90 99.70 9867.26 -167.20 996.88 92.82 1010.81 99.52 2.21 -2.21

93 10,073 11.50 99.10 9959.62 -170.05 1014.10 94.47 1028.26 99.52 1.71 1.70

94 10,168 12.80 85.20 10052.51 -170.66 1033.95 98.93 1047.94 99.37 3.36 1.37

95 10,262 11.20 82.30 10144.45 -168.57 1053.37 105.92 1066.77 99.09 1.82 -1.70

96 10,357 10.40 79.80 10237.77 -165.81 1070.95 113.07 1083.71 98.80 0.98 -0.84

009 04 02

Company: Murchison Oil & Gas, Inc.

Well Name: Jackson Unit 30H

Location: Lea County, NM

Rig: Cactus #136

Job Number: DDMO-150490

API #: 30-025-42652

Vertical Section Azimuth:

Survey Calculation Method:

PTB: MD 15.695 Inc 10.80 Azm 77.70 TVD 10331.15 N/S 1.3

Minimum Curvature

AZM 1.3

TVD 10864.6 E/W 4751.92 N/S 4751.92

Proposed Direction: 14.79

Magnetic Declination: 6.84

REFERENCED TO GRID NORTH



SURVEY CALCULATION PROGRAM

10/1/15 14:48

K09.04.02

Company: Murchison Oil & Gas, Inc.

Well Name: Jackson Unit 30H

Location: Lea County, NM

Rig: Cactus #136

Job Number: DDMO-150490

API #: 30-025-42652

Vertical Section Azimuth: 14.79

Survey Calculation Method: Minimum Curvature

PTB: MD 15.695

INC 95.2

AZM 1.3

TVD 10864.6

E/W 4751.92

N/S 1248.64

Distance 2022.44

Closure 38.04

Azimuth 0.38

DLS/ 0.15

BUR/ 0.11

100' 0.53

0.71

0.63

1.27

-0.53

-0.85

0.32

0.61

0.86

0.88

-0.85

0.75

0.74

-1.05

0.62

0.53

24.49

23.72

0.80

1.08

-1.06

0.43

0.74

0.53

-0.64

1.06

0.62

0.74

0.53

Magnetic Declination: 6.84

Proposed Direction: 14.79

TVD 1246.18

E/W 1246.42

N/S 1950.16

Surface 2042.07

Vert Sec 2133.92

Distance 2225.94

Closure 2317.06

Azimuth 2408.89

DLS/ 2499.66

BUR/ 2590.40

100' 2681.09

0.75

0.74

-1.05

0.62

0.53

26.14

25.29

24.49

23.72

0.80

1.08

-1.06

0.43

0.74

0.53

21.05

20.46

19.91

19.40

18.93

18.50

17.69

17.32

16.95

16.60

16.28

15.98

15.69

15.29

1.15

1.06

1.06



SURVEY CALCULATION PROGRAM

10/1/15 14:48

Company:		Murchison Oil & Gas, Inc.																					
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PTB:		MD		INC		AZM		TVD		N/S		E/W		VS									
		15.695		95.2		1.3		10864.6		4751.92		1248.64		4913.23									
#		Depth Feet		Inc Degrees		Azim Degrees		TVD Feet		N/S Feet		E/W Feet		Surface Vert Sec		Closure Distance		Azim		DLS/ 100		BUR/ 100'	
161		15,587		95.10		1.30		10874.33		4644.39		1246.20		4808.64		4808.68		15.02		0.67		0.64	
162		15,647		95.20		1.30		10868.95		4704.13		1247.55		4866.75		4866.75		14.85		0.17		0.17	