



7821 Will Rogers Blvd.
Fort Worth, Texas 76140

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

Survey Company: MS Energy Services
MWD Surveyor Name: Michael Pullin
Survey Type: MWD
Operating Company: Murchison Oil & Gas Inc.
Well Name & Number: Jawbone State 1H
API Number: 30-015-43987
Surveyed Depths: 349' – 11,955' MD

Dates Performed: 02/13/2017 – 02/27/2017
Location: Eddy County, NM

NM OIL CONSERVATION
ARTESIA DISTRICT

APR 03 2017

RECEIVED

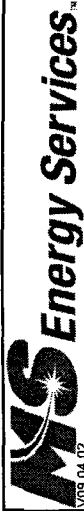
I certify that the data is true, correct and complete and within the limitations of the tool set forth by MS Energy Services; that I am authorized and qualified to make this report and that I have reviewed this report and find it conforms to the principles and procedures as set forth by MS Energy Services.

Digitally signed by: _____
Title: MWD Field Specialist
Date: 2017-03-28
Email: mpullin@msenergyservices.com

APR 03 2017

SURVEY CALCULATION PROGRAM

3/2/17 11:28



RECEIVED

Company: Murchison Oil & Gas Inc.

Well Name: Jawbone State 1H

Location: Eddy County, NM

Rig: Nabors M55

Job Number: DDMO-170041

API #: 30-015-43987

Magnetic Declination: 7.33

REFERENCED TO GRID NORTH

Vertical Section Azimuth: 165.06

Proposed Direction: 165.06

Survey Calculation Method: Minimum Curvature

PTB:	MD		INC		AZM		TVD		N/S		E/W		Surface		Closure		DLS/		BUR/	
	12,135		93		180.5		7176.08		-4823.19		1231.36		VS				100		100'	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Distance	Azm											
TIE IN	285	0.90	131.30	284.99	-1.22	-0.15	1.14	1.23	187.01											
1	349	1.40	114.00	348.98	-1.87	0.94	2.05	2.09	153.26								0.94		0.78	
2	470	0.90	125.20	469.95	-3.02	3.07	3.71	4.30	134.53								0.45		-0.41	
3	599	0.90	131.80	598.94	-4.28	4.65	5.33	6.32	132.60								0.08		0.00	
4	694	0.70	116.60	693.93	-5.04	5.73	6.34	7.63	131.32								0.31		-0.21	
5	789	0.60	131.50	788.92	-5.62	6.62	7.14	8.69	130.36								0.21		-0.11	
6	884	0.70	142.10	883.92	-6.41	7.35	8.09	9.75	131.11								0.16		0.11	
7	979	0.80	170.20	978.91	-7.52	7.82	9.28	10.85	133.90								0.40		0.11	
8	1,074	0.70	183.90	1073.90	-8.76	7.89	10.49	11.79	137.98								0.22		-0.11	
9	1,170	0.80	159.50	1169.89	-9.97	8.08	11.72	12.84	140.96								0.35		0.10	
10	1,265	1.00	141.10	1264.88	-11.24	8.84	13.13	14.29	141.81								0.37		0.21	
11	1,361	1.10	123.30	1360.86	-12.39	10.13	14.59	16.01	140.73								0.35		0.10	
12	1,456	0.50	96.20	1455.85	-12.94	11.31	15.42	17.18	138.85								0.73		-0.63	
13	1,551	0.90	15.90	1550.85	-12.27	11.92	14.93	17.11	135.81								1.00		0.42	
14	1,646	1.30	42.50	1645.83	-10.75	12.86	13.70	16.76	129.91								0.67		0.42	
15	1,742	1.50	58.70	1741.80	-9.30	14.67	12.76	17.37	122.37								0.46		0.21	
16	1,837	0.80	340.10	1836.79	-8.03	15.50	11.75	17.46	117.38								1.64		-0.74	
17	1,932	1.10	318.50	1931.78	-6.72	14.67	10.28	16.14	114.61								0.49		0.32	
18	2,027	0.80	314.00	2026.76	-5.58	13.59	8.89	14.69	112.31								0.33		-0.32	
19	2,123	2.00	70.20	2122.74	-4.54	14.69	8.18	15.37	107.20								2.56		1.25	
20	2,218	4.10	77.10	2217.60	-3.23	19.56	8.16	19.82	99.36								2.24		2.21	
21	2,313	5.80	81.20	2312.25	-1.73	27.61	8.79	27.67	93.59								1.83		1.79	
22	2,408	7.80	79.80	2406.57	0.14	38.70	9.84	38.70	89.79								2.11		2.11	
23	2,504	9.30	82.00	2501.50	2.38	52.79	11.31	52.85	87.42								1.60		1.56	
24	2,599	11.00	80.50	2595.01	4.94	69.34	13.10	69.51	85.92								1.81		1.79	
25	2,695	12.40	82.70	2689.02	7.76	88.59	15.34	88.93	84.99								1.53		1.46	
26	2,789	13.70	83.80	2780.59	10.25	109.67	18.37	110.15	84.66								1.41		1.38	
27	2,885	15.50	82.70	2873.48	13.11	133.70	21.81	134.34	84.40								1.90		1.88	
28	2,980	15.20	81.90	2965.10	16.47	158.62	24.98	159.47	84.07								0.39		-0.32	
29	3,075	14.60	81.80	3056.90	19.94	182.80	27.87	183.89	83.78								0.63		-0.63	
30	3,170	14.50	81.10	3148.85	23.48	206.40	30.52	207.73	83.51								0.21		-0.11	
31	3,266	13.40	80.80	3242.02	27.12	229.26	32.90	230.86	83.25								1.15		-1.15	
32	3,361	14.80	82.90	3334.16	30.38	252.17	35.66	253.99	83.13								1.57		1.47	
33	3,455	14.30	83.10	3425.14	33.26	275.60	38.92	277.60	83.12								0.53		-0.53	



Company: Murchison Oil & Gas Inc.

Well Name: Jawbone State 1H

Location: Eddy County, NM

Rig: Nabors M55

Job Number: DDMO-170041

API #: 30-015-43987

Vertical Section Azimuth: 165.06

Survey Calculation Method: Minimum Curvature

PTB: MD 12,135

INC 93

AZM 180.5

TVD Feet 3517.87

Azm Degrees 83.30

Depth Feet 3,551

Inc Degrees 15.70

MD 3,645

83.30

15.30

3,741

83.30

14.80

3,835

84.70

16.20

3,930

84.10

15.50

4,025

82.80

14.40

4,120

84.50

14.90

4,216

83.90

16.20

4,310

84.20

15.60

4,403

84.90

15.50

4,499

85.00

14.80

4,593

85.30

13.60

4,688

83.90

15.20

4,783

83.80

14.40

4,877

82.90

16.10

4,972

81.70

15.60

5,067

82.30

15.50

5,163

82.10

14.10

5,258

84.10

16.20

5,353

84.60

16.10

5,448

83.10

15.50

5,542

82.40

15.00

5,637

82.00

13.40

5,732

84.10

15.60

5,827

83.80

13.90

5,922

82.70

14.60

6,017

81.90

15.80

6,112

81.30

14.70

6,208

83.30

16.30

6,303

85.10

14.80

6,398

83.30

16.10

6,493

84.30

14.90

6,588

79.80

16.20

6,683

79.40

16.00

3517.87

83.30

15.70

3645

83.30

15.30

3741

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14.80

3835

84.70

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4120

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4216

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SURVEY CALCULATION PROGRAM

3/2/17 11:28

Company:	Murchison Oil & Gas Inc.
Well Name:	Jawbone State 1H
Location:	Eddy County, NM
Rig:	Nabors M55
Job Number:	DDMO-170041
API #:	30-015-43987

REFERENCED TO GRID NORTH

Magnetic Declination: 7.33

Proposed Direction: 165.06

Vertical Section Azimuth: 165.06

Survey Calculation Method: Minimum Curvature

PTB: MD 12,135

INC 93

AZM 180.5

TVD Feet

N/S Feet

E/W Feet

Surface Vert Sec

N/S -4823.19

E/W 7176.08

Distance Closure

1231.36

DLS/ 100'

BUR/ 100'

VS 4977.61

#

Depth Feet

Inc Degrees

Azim Degrees

TVD Feet

N/S Feet

E/W Feet

Surface Vert Sec

N/S -4823.19

E/W 7176.08

Distance Closure

1231.36

DLS/ 100'

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DLS/ 100'

BUR/ 100'

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PTB: MD 12,135

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TVD Feet

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E/W Feet

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N/S Feet

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TVD Feet

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TVD Feet

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TVD Feet

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TVD Feet

N/S Feet

E/W Feet

Magnetic Declination: 7.33

Proposed Direction: 165.06

Distance

Azimuth

Closure

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TELEDRIFT

P.O.Box 94395 * Oklahoma City, OK 73143-4395 Ph : 405-631-4882

ISSUING AGENCY	CERTIFICATION NUMBER
Teledrift Company	Eddy County NM

State of New Mexico

I, Zack Brown, certify that I am employed by TELEDRIFT and I did conduct or supervise the taking of survey data started on 14 FEB 17 for the Jawbone State 1H well from a depth of 0' to a depth of 303'. This data is true, correct, complete and within the limitations of the tools as set forth by TELEDRIFT. I am authorized and qualified to make this report and this survey was conducted at the request of Murchison, for the Jawbone State 1H well in Eddy. I have reviewed this report and find that it conforms to the principles and procedures as set forth by TELEDRIFT.

NM OIL CONSERVATION
ARTESIA DISTRICT

APR 03 2017

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NAME: <u>Zack Brown</u>	TITLE: <u>Field Tech</u>
SIGNATURE: <u>[Signature]</u>	

NAME: <u>David Jackson</u>	TITLE: <u>Monitoring Tech</u>
SIGNATURE: <u>[Signature]</u>	

NAME: <u>David Terrill</u>	TITLE: <u>Regional Manager</u>
SIGNATURE: <u>[Signature]</u>	



SURVEY REPORT

Page 1 of 1

PROSHOT-X MWD BY TELEDRIIFT
P.O. BOX 94395
OKLAHOMA CITY, OK 73143-4395
TEL: 405-631-4882
FAX: 405-631-8344
WWW.TELEDRIIFT.COM

ProView Version 7.41
Report created using job file: NaborsM55-14FEB17
Report saved on 15 Feb 2017 09:55
Depth in feet

WELL NAME Jawbone State 1H
NORTH CORRECTION 7.3°
JOB ID NaborsM55
COMPANY Murchison
CONTRACTOR Nabors M55
START DATE 14 FEB 17
API #
LOCATION Eddy

All azimuths are referenced to true north
and corrected with the north correction above.

NM OIL CONSERVATION
ARTESIA DISTRICT

APR 03 2017

RECEIVED

SURVEY #	MEAS.DEPTH	SURVEY DEPTH	DATE	TIME	INCLINATION	AZIMUTH
Tie-in	0.0	0.0	14-Feb-17	15:11	00.0	0.0
0005	90.0	72.0	14-Feb-17	17:06	00.3	222.3
0004	180.0	162.0	14-Feb-17	16:41	00.3	217.3
0003	270.0	252.0	14-Feb-17	16:35	00.4	148.3
0002	303.0	285.0	14-Feb-17	15:21	00.9	131.3