15-42474

Company Name: Mewbourne Oil Co
Ruger 31 B2EH Fed Com #1H
Eddy County, New Mexico
Rig: Patterson #46
Created By: John Mooney
Date: 09/30/2014

Mewbourne Oil Company

Ruger 31 B2EH Fed Com #1H
Eddy County, New Mexico
Quote 140918 & WT-140877
Design #2 - Tied to Gyro

The DIRECTIONAL DRILLING COMPANY

PROJECT DETAILS:	Eddy County, New Mexico
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico East 3001
System Datum:	Mean Sea Level

WELL DETAILS:	Ruger 31 B2EH Fed Com #1H				
	Ground Level:	3295.0			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	588680.00	665311.80	32° 37' 8.543 N	104° 7' 16.360 W

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL Ruger 31 B2EH Fed Com #1H Dd2 - plan hits target center	7735.0	315.7	4610.7	588996.75	669952.61	32° 37' 8.572 N	104° 6' 22.093 W

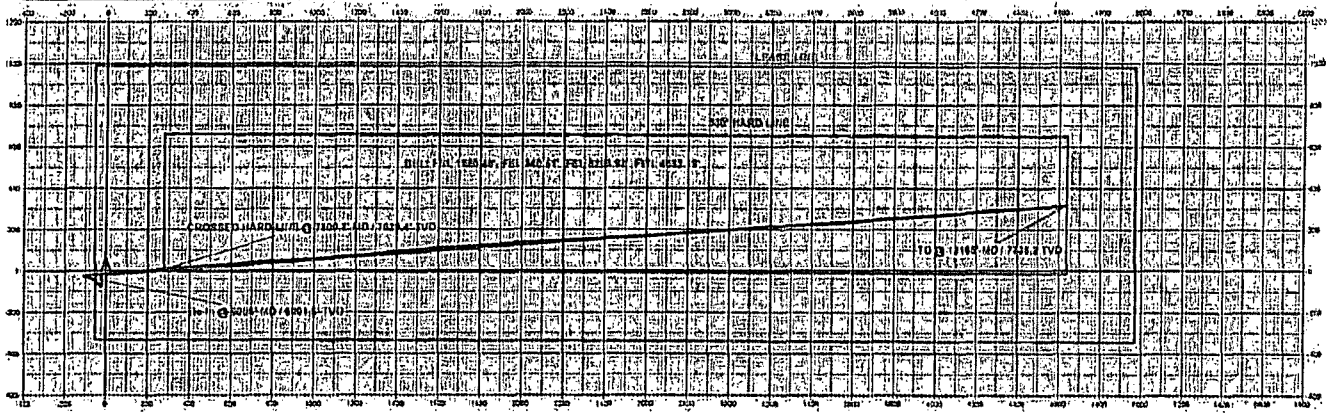
ANNOTATIONS							
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
6996.0	0.11	207.96	6991.5	-28.2	-109.3	112.9	104.5	Tie-In @ 6996' MD / 6991.5' TVD
7800.2	75.94	89.55	7629.4	8.6	279.0	-272.4	585.4	CROSSED HARD-LINE @ 7800.2' MD / 7629.4' TVD
12165.0	89.70	89.40	7735.2	312.9	4630.2	-4581.9	4947.7	TD @ 12165' MD / 7735.2 TVD

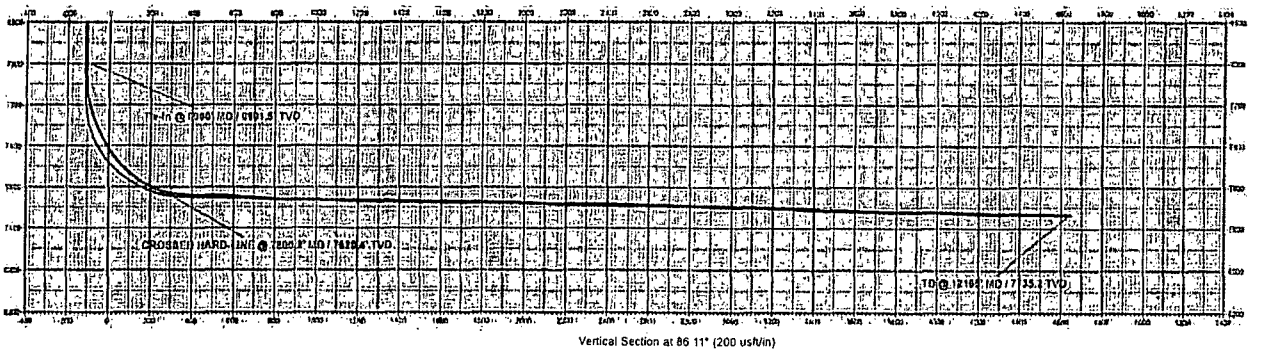
T G M

Azimuths to Grid North

Correction: 7.36°

Magnetic Field
Strength: 48474.3snT
Dip Angle: 60.38°
Date: 8/27/2014
Model: IGRF2010





Vertical Section at 86.11° (200 usft/in)

Mewbourne Oil Co

Eddy County, New Mexico
Sec 31, T9S, R9E
Ruger 31 B2EH Fed Com #1H

Wellbore #1

Design: Wellbore #1

DDC Survey Report

30 September, 2014

DDC
The DIRECTIONAL DRILLING COMPANY

HP

Survey Report

Company:	Mewbourne Oil Co.	Local Co-ordinate Reference:	Well Ruger 31-B2EH Fed Com #1H
Project:	Eddy County New Mexico	TVD Reference:	Well @ 3315.0usft (Patterson)
Site:	Sec 31 T9S R9E	MD Reference:	Well @ 3315.0usft (Patterson)
Well:	Ruger 31-B2EH Fed Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Project Eddy County New Mexico

Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Sec 31 T9S R9E

Site Position:		Northing:	586,420.00 usft	Latitude:	32° 36' 43.178 N
From:	Map	Easting:	565,319.60 usft	Longitude:	104° 7' 16.322 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.11 °

Well Ruger 31-B2EH Fed Com #1H

Well Position	+N/-S	0.0 usft	Northing:	588,680.08 usft	Latitude:	32° 37' 5.543 N
	+E/-W	0.0 usft	Easting:	565,311.80 usft	Longitude:	104° 7' 16.360 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,295.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/27/2014	7.48	60.38	48,474

Design Wellbore #1

Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0

Vertical Section	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	255.55

Survey Program Date 9/30/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	6,996.0	Gyro Survey (Wellbore #1)	Good_gyro	Good Gyro
7,094.0	12,165.0	MWD Survey (Wellbore #1)	MWD default	MWD - Standard

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.85	235.15	100.0	-0.4	-0.6	0.7	0.85	0.85	0.00
200.0	2.34	235.19	200.0	-2.0	-2.9	3.3	1.49	1.49	0.04
300.0	3.78	225.48	299.8	-5.5	-6.9	8.1	1.53	1.44	-9.71
400.0	4.35	228.56	399.6	-10.3	-12.1	14.3	0.61	0.57	3.08
500.0	3.48	224.81	499.3	-15.0	-17.1	20.3	0.91	-0.87	-3.75
600.0	2.87	212.43	599.2	-19.2	-20.6	24.7	0.91	-0.61	-12.38
700.0	2.17	186.38	699.1	-23.2	-22.1	27.2	1.32	-0.70	-26.05
800.0	2.07	180.08	799.0	-26.9	-22.3	28.4	0.25	-0.10	-6.30
900.0	1.93	173.86	898.9	-30.4	-22.2	29.1	0.26	-0.14	-6.22

HP

Survey Report

Company:	Mewbourne Oil Co.	Local Co-ordinate Reference:	Well Ruger 31 B2EH Fed Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	Well @ 3315.0usft (Patterson)
Site:	Sec 31 T9S R9E	MD Reference:	Well @ 3315.0usft (Patterson)
Well:	Ruger 31 B2EH Fed Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	1.72	169.19	998.9	-33.6	-21.7	29.4	0.26	-0.21	-4.67
1,100.0	1.58	176.23	1,098.9	-36.4	-21.3	29.7	0.25	-0.14	7.04
1,200.0	1.60	169.19	1,198.8	-39.1	-21.0	30.1	0.20	0.02	-7.04
1,300.0	1.48	168.16	1,298.8	-41.8	-20.5	30.2	0.12	-0.12	-1.03
1,400.0	1.63	173.39	1,398.7	-44.5	-20.0	30.5	0.21	0.15	5.23
1,500.0	2.06	176.58	1,498.7	-47.7	-19.8	31.0	0.44	0.43	3.19
1,600.0	1.87	177.69	1,598.6	-51.1	-19.6	31.7	0.19	-0.19	1.11
1,700.0	1.70	178.55	1,698.6	-54.2	-19.5	32.4	0.17	-0.17	0.86
1,800.0	1.54	183.56	1,798.5	-57.0	-19.5	33.1	0.21	-0.16	5.01
1,900.0	1.43	181.67	1,898.5	-59.6	-19.6	33.9	0.12	-0.11	-1.89
2,000.0	1.32	180.55	1,998.5	-62.0	-19.7	34.5	0.11	-0.11	-1.12
2,100.0	1.37	179.62	2,098.5	-64.4	-19.7	35.1	0.05	0.05	-0.93
2,200.0	1.17	185.50	2,198.4	-66.6	-19.8	35.8	0.24	-0.20	5.88
2,300.0	1.21	199.33	2,298.4	-68.6	-20.2	36.7	0.29	0.04	13.83
2,400.0	1.16	206.92	2,398.4	-70.5	-21.0	38.0	0.16	-0.03	7.59
2,500.0	1.02	202.96	2,498.4	-72.2	-21.9	39.2	0.18	-0.16	-3.96
2,600.0	0.85	198.78	2,598.4	-73.8	-22.4	40.1	0.18	-0.17	-4.18
2,700.0	0.85	206.69	2,698.3	-75.1	-23.0	41.0	0.12	0.00	7.91
2,800.0	0.66	213.02	2,798.3	-76.3	-23.7	41.9	0.21	-0.19	6.33
2,900.0	0.26	227.84	2,898.3	-76.9	-24.1	42.6	0.41	-0.40	14.82
3,000.0	0.36	275.12	2,998.3	-77.0	-24.6	43.1	0.26	0.10	47.28
3,100.0	0.09	279.76	3,098.3	-77.0	-25.0	43.4	0.27	-0.27	4.64
3,200.0	0.19	320.63	3,198.3	-76.8	-25.2	43.6	0.14	0.10	40.87
3,300.0	0.25	345.00	3,298.3	-76.5	-25.4	43.6	0.11	0.06	24.37
3,400.0	0.34	340.56	3,398.3	-76.0	-25.5	43.7	0.09	0.09	-4.44
3,500.0	0.44	353.89	3,498.3	-75.4	-25.7	43.6	0.13	0.10	13.33
3,600.0	0.40	337.82	3,598.3	-74.7	-25.8	43.6	0.12	-0.04	-16.07
3,700.0	0.53	3.12	3,698.3	-73.9	-25.9	43.5	0.24	0.13	25.30
3,800.0	0.72	340.71	3,798.3	-72.8	-26.1	43.5	0.31	0.19	-22.41
3,900.0	0.96	335.81	3,898.3	-71.5	-26.7	43.7	0.25	0.24	-4.90
4,000.0	1.59	323.19	3,998.3	-69.6	-27.8	44.3	0.69	0.63	-12.62
4,100.0	1.86	315.38	4,098.2	-67.3	-29.8	45.7	0.36	0.27	-7.81
4,200.0	2.43	312.23	4,198.2	-64.7	-32.5	47.6	0.58	0.57	-3.15
4,300.0	2.92	304.42	4,298.1	-61.9	-36.2	50.5	0.61	0.49	-7.81
4,400.0	2.88	304.93	4,397.9	-59.0	-40.4	53.8	0.05	-0.04	0.51
4,500.0	2.93	305.82	4,497.8	-56.1	-44.5	57.1	0.07	0.05	0.89
4,600.0	2.95	307.24	4,597.7	-53.0	-48.6	60.3	0.08	0.02	1.42
4,700.0	3.05	307.60	4,697.5	-49.8	-52.8	63.5	0.10	0.10	0.36
4,800.0	3.17	305.67	4,797.4	-46.6	-57.1	66.9	0.16	0.12	-1.93
4,900.0	3.31	304.67	4,897.2	-43.3	-61.7	70.6	0.15	0.14	-1.00
5,000.0	3.30	301.93	4,997.1	-40.2	-66.6	74.5	0.16	-0.01	-2.74
5,100.0	3.45	299.73	5,096.9	-37.2	-71.6	78.6	0.20	0.15	-2.20
5,200.0	3.67	297.95	5,196.7	-34.2	-77.1	83.1	0.25	0.22	-1.78

HP

Survey Report

Company:	Mewbourne Oil Co	Local Co-ordinate Reference:	Well Ruger 31 B2EH Fed Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	Well @ 3315.0usft (Patterson)
Site:	Sec 31 T9S R9E	MD Reference:	Well @ 3315.0usft (Patterson)
Well:	Ruger 31 B2EH Fed Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.0	4.26	288.16	5,296.4	-31.5	-83.4	88.6	0.90	0.59	-9.79
5,400.0	4.76	285.58	5,396.1	-29.2	-90.9	95.4	0.54	0.50	-2.58
5,500.0	4.61	284.80	5,495.8	-27.1	-98.8	102.5	0.16	-0.15	-0.78
5,600.0	2.93	274.44	5,595.6	-25.9	-105.3	108.4	1.61	-1.68	-10.36
5,700.0	1.13	252.59	5,695.5	-26.0	-108.7	111.8	1.93	-1.80	-21.85
5,800.0	0.26	189.33	5,795.5	-26.5	-109.7	112.9	1.04	-0.87	-63.26
5,900.0	0.08	1.39	5,895.5	-26.6	-109.8	112.9	0.34	-0.18	172.06
6,000.0	0.15	334.85	5,995.5	-26.5	-109.8	112.9	0.09	0.07	-26.54
6,100.0	0.09	309.81	6,095.5	-26.3	-109.9	113.0	0.08	-0.06	-25.04
6,200.0	0.04	237.11	6,195.5	-26.3	-110.0	113.1	0.09	-0.05	-72.70
6,300.0	0.16	174.19	6,295.5	-26.4	-110.0	113.1	0.15	0.12	-62.92
6,400.0	0.17	172.40	6,395.5	-26.7	-110.0	113.2	0.01	0.01	-1.79
6,500.0	0.19	160.29	6,495.5	-27.0	-109.9	113.2	0.04	0.02	-12.11
6,600.0	0.15	139.12	6,595.5	-27.3	-109.8	113.1	0.07	-0.04	-21.17
6,700.0	0.21	143.62	6,695.5	-27.5	-109.6	113.0	0.06	0.06	4.50
6,800.0	0.14	150.97	6,795.5	-27.8	-109.4	112.9	0.07	-0.07	7.35
6,900.0	0.14	161.26	6,895.5	-28.0	-109.3	112.8	0.03	0.00	10.29
Tie-In @ 6996' MD / 6991.5' TVD									
6,996.0	0.11	207.96	6,991.5	-28.2	-109.3	112.9	0.11	-0.03	48.65
7,094.0	2.80	74.90	7,089.5	-27.6	-107.1	110.6	2.93	2.74	-135.78
7,126.0	6.20	79.10	7,121.4	-27.1	-104.6	108.1	10.67	10.63	13.13
7,158.0	9.50	76.30	7,153.1	-26.1	-100.3	103.7	10.38	10.31	-8.75
7,190.0	12.50	77.70	7,184.5	-24.8	-94.4	97.6	9.41	9.38	4.38
7,222.0	15.50	81.20	7,215.5	-23.4	-86.8	89.9	9.74	9.38	10.94
7,254.0	18.60	81.20	7,246.1	-22.0	-77.5	80.5	9.69	9.69	0.00
7,285.0	21.80	81.20	7,275.2	-20.3	-66.9	69.9	10.32	10.32	0.00
7,317.0	23.90	84.00	7,304.7	-18.7	-54.6	57.6	7.39	6.56	8.75
7,349.0	25.50	90.30	7,333.8	-18.1	-41.3	44.5	9.62	5.00	19.69
7,381.0	27.60	88.60	7,362.4	-17.9	-27.0	30.6	6.98	6.56	-5.31
7,413.0	29.70	86.50	7,390.5	-17.3	-11.6	15.6	7.28	6.56	-6.56
7,445.0	32.00	85.40	7,417.9	-16.1	4.7	-0.6	7.40	7.19	-3.44
7,477.0	35.00	86.80	7,444.6	-14.9	22.3	-17.9	9.68	9.38	4.38
7,509.0	39.10	85.80	7,470.2	-13.7	41.6	-36.8	12.95	12.81	-3.13
7,541.0	43.10	84.30	7,494.3	-11.8	62.5	-57.6	12.87	12.50	-4.69
7,573.0	46.80	83.30	7,516.9	-9.4	85.0	-80.0	11.77	11.56	-3.13
7,605.0	50.70	84.00	7,538.0	-6.7	108.9	-103.8	12.30	12.19	2.19
7,636.0	54.00	84.30	7,556.9	-4.2	133.3	-128.0	10.67	10.65	0.97
7,668.0	57.40	84.30	7,575.0	-1.6	159.6	-154.2	10.63	10.63	0.00
7,700.0	60.90	85.40	7,591.4	0.8	187.0	-181.3	11.33	10.94	3.44
7,732.0	64.60	84.70	7,606.0	3.3	215.3	-209.3	11.72	11.56	-2.19
7,764.0	69.30	85.40	7,618.6	5.8	244.6	-238.4	14.82	14.69	2.19
7,796.0	75.10	85.40	7,628.3	8.3	275.0	-268.4	18.13	18.13	0.00
CROSSED HARD-LINE @ 7800.2' MD / 7629.4' TVD									
7,800.2	75.94	85.55	7,629.4	8.6	279.0	-272.4	20.30	19.99	3.62

Company:	Mewbourne Oil Co	Local Co-ordinate Reference:	Well Ruger 31 B2EH Fed Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	Well @ 3315.0usft (Patterson)
Site:	Sec 31 T9S R9E	MD Reference:	Well @ 3315.0usft (Patterson)
Well:	Ruger 31 B2EH Fed Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,827.0	81.30	86.50	7,634.7	10.4	305.2	-298.2	20.30	20.00	3.54
7,859.0	85.70	86.10	7,638.3	12.5	337.0	-329.4	13.81	13.75	-1.25
7,891.0	85.90	86.50	7,640.6	14.5	368.8	-360.8	1.39	0.63	1.25
7,923.0	87.80	86.50	7,642.4	16.5	400.7	-392.1	5.94	5.94	0.00
7,955.0	90.40	86.10	7,642.9	18.5	432.6	-423.6	8.22	8.13	-1.25
7,987.0	90.80	85.80	7,642.6	20.8	464.6	-455.1	1.56	1.25	-0.94
8,018.0	88.70	85.80	7,642.7	23.1	495.5	-485.6	6.77	-6.77	0.00
8,049.0	88.90	85.10	7,643.3	25.5	526.4	-516.1	2.35	0.65	-2.26
8,081.0	86.60	85.10	7,644.6	28.3	558.2	-547.6	7.19	-7.19	0.00
8,113.0	85.70	84.70	7,646.7	31.1	590.0	-579.1	3.08	-2.81	-1.25
8,145.0	85.20	85.10	7,649.3	33.9	621.8	-610.6	2.00	-1.56	1.25
8,177.0	85.00	84.30	7,652.0	36.9	653.5	-642.1	2.57	-0.63	-2.50
8,209.0	85.90	85.40	7,654.6	39.7	685.3	-673.6	4.43	2.81	3.44
8,240.0	87.30	86.50	7,656.4	41.9	716.2	-704.0	5.74	4.52	3.55
8,272.0	87.60	86.80	7,657.8	43.8	748.1	-735.4	1.33	0.94	0.94
8,335.0	88.30	87.50	7,660.1	46.9	811.0	-797.0	1.57	1.11	1.11
8,399.0	89.00	87.20	7,661.6	49.9	874.9	-859.7	1.19	1.09	-0.47
8,463.0	88.50	87.20	7,663.0	53.0	938.8	-922.3	0.78	-0.78	0.00
8,527.0	89.60	86.50	7,664.0	56.5	1,002.7	-985.1	2.04	1.72	-1.09
8,590.0	89.20	85.80	7,664.7	60.8	1,065.5	-1,047.0	1.28	-0.63	-1.11
8,654.0	88.50	86.10	7,666.0	65.3	1,129.4	-1,109.9	1.19	-1.09	0.47
8,718.0	89.00	85.10	7,667.4	70.2	1,193.2	-1,172.9	1.75	0.78	-1.56
8,782.0	89.20	84.30	7,668.4	76.1	1,256.9	-1,236.1	1.29	0.31	-1.25
8,845.0	88.70	83.30	7,669.5	82.9	1,319.5	-1,298.5	1.77	-0.79	-1.59
8,909.0	88.50	84.30	7,671.1	89.8	1,383.1	-1,361.8	1.59	-0.31	1.56
8,973.0	88.70	85.10	7,672.7	95.7	1,446.8	-1,424.9	1.29	0.31	1.25
9,036.0	89.70	85.80	7,673.5	100.7	1,509.6	-1,487.0	1.94	1.59	1.11
9,100.0	90.10	86.10	7,673.7	105.2	1,573.4	-1,549.9	0.78	0.63	0.47
9,164.0	90.30	85.80	7,673.4	109.8	1,637.3	-1,612.9	0.56	0.31	-0.47
9,227.0	89.00	86.10	7,673.8	114.2	1,700.1	-1,674.8	2.12	-2.06	0.48
9,291.0	88.70	86.50	7,675.1	118.3	1,764.0	-1,737.7	0.78	-0.47	0.63
9,354.0	88.70	86.10	7,676.5	122.4	1,826.8	-1,799.6	0.63	0.00	-0.63
9,418.0	89.00	85.80	7,677.8	126.9	1,890.7	-1,862.5	0.66	0.47	-0.47
9,482.0	89.00	85.10	7,678.9	132.0	1,954.4	-1,925.6	1.09	0.00	-1.09
9,577.0	88.20	87.90	7,681.3	137.8	2,049.2	-2,018.8	3.06	-0.84	2.95
9,673.0	87.80	87.20	7,684.6	141.9	2,145.1	-2,112.6	0.84	-0.42	-0.73
9,768.0	89.70	86.80	7,686.7	146.9	2,239.9	-2,205.7	2.04	2.00	-0.42
9,864.0	90.30	86.50	7,686.7	152.5	2,335.8	-2,299.9	0.70	0.63	-0.31
9,960.0	88.70	87.20	7,687.5	157.8	2,431.6	-2,394.1	1.82	-1.67	0.73
10,055.0	88.70	86.80	7,689.7	162.7	2,526.5	-2,487.1	0.42	0.00	-0.42
10,151.0	89.00	85.80	7,691.6	168.9	2,622.2	-2,581.4	1.09	0.31	-1.04
10,246.0	88.30	85.40	7,693.8	176.2	2,716.9	-2,675.0	0.85	-0.74	-0.42
10,341.0	88.90	86.50	7,696.2	182.9	2,811.7	-2,768.4	1.32	0.63	1.16

HP

Survey Report

Company:	Mewbourne Oil Co.	Local Co-ordinate Reference:	Well Ruger 31 B2EH Fed Com #1H
Project:	Eddy County, New Mexico	TVD Reference:	Well @ 3315.0usft (Patterson)
Site:	Sec 31 T9S R9E	MD Reference:	Well @ 3315.0usft (Patterson)
Well:	Ruger 31 B2EH Fed Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,436.0	89.60	86.10	7,697.4	189.0	2,906.5	-2,861.7	0.85	0.74	-0.42
10,531.0	88.50	85.80	7,699.0	195.8	3,001.2	-2,955.1	1.20	-1.16	-0.32
10,625.0	88.30	85.40	7,701.6	203.0	3,094.9	-3,047.6	0.48	-0.21	-0.43
10,721.0	88.30	86.80	7,704.4	209.5	3,190.6	-3,142.0	1.46	0.00	1.46
10,817.0	88.70	87.20	7,707.0	214.5	3,286.5	-3,236.0	0.59	0.42	0.42
10,912.0	86.20	87.20	7,711.2	219.1	3,381.2	-3,329.0	2.63	-2.63	0.00
11,007.0	87.30	86.80	7,716.6	224.1	3,476.0	-3,421.9	1.23	1.16	-0.42
11,102.0	88.70	84.70	7,719.9	231.1	3,570.6	-3,515.4	2.66	1.47	-2.21
11,197.0	89.20	84.30	7,721.6	240.2	3,665.2	-3,609.2	0.67	0.53	-0.42
11,292.0	89.00	86.80	7,723.1	247.6	3,759.9	-3,702.7	2.64	-0.21	2.63
11,387.0	90.40	86.10	7,723.6	253.5	3,854.7	-3,796.0	1.65	1.47	-0.74
11,482.0	89.60	85.60	7,723.6	260.2	3,949.4	-3,889.5	0.90	-0.84	-0.32
11,576.0	88.90	85.40	7,724.8	267.4	4,043.2	-3,982.0	0.86	-0.74	-0.43
11,671.0	87.80	84.00	7,727.6	276.2	4,137.7	-4,075.8	1.87	-1.16	-1.47
11,766.0	88.70	86.50	7,730.5	284.1	4,232.3	-4,169.3	2.80	0.95	2.63
11,860.0	89.00	86.10	7,732.4	290.1	4,326.1	-4,261.7	0.53	0.32	-0.43
11,954.0	89.40	86.10	7,733.7	296.5	4,419.9	-4,354.1	0.43	0.43	0.00
12,049.0	89.60	85.40	7,734.5	303.6	4,514.6	-4,447.6	0.77	0.21	-0.74
12,111.0	89.70	85.40	7,734.9	308.5	4,576.4	-4,508.7	0.16	0.16	0.00
TD @ 12165' MD / 7735.2 TVD									
12,165.0	89.70	85.40	7,735.2	312.9	4,630.2	-4,561.9	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,996.0	6,991.5	-28.2	-109.3	Tie-In @ 6996' MD / 6991.5' TVD
7,800.2	7,629.4	8.6	279.0	CROSSED HARD-LINE @ 7800.2' MD / 7629.4' TVD
12,165.0	7,735.2	312.9	4,630.2	TD @ 12165' MD / 7735.2 TVD

Checked By: _____ Approved By: _____ Date: _____

MS Energy Services

Job Number: SVMO-141268
Company: Mewbourne Oil & Gas
Lease/Well: Ruger 31 B2EH Fed Com 1H
Location: Eddy County, NM
Rig Name: Patterson #46
RKB: 20.5'
G.L. or M.S.L.: GL

State/Country: New Mexico/USA
Declination: 7.39°
Grid: East To Grid North
File name: Y:\WINSER~1\2014SU~1\MEWBOU~1\MO\RUGER3~2\1H.SVY
Date/Time: 19-Sep-14 / 15:57
Curve Name: Surface - 6996' M.D. (Rate Gyro)

MS Survey

We hereby certify that our survey data from Surface MD to 6996' MD is, to the best of our knowledge a true and accurate account of the well bore.

Harley Patterson 9/19/14
MS Energy Services Date

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane .00
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.85	235.15	100.00	-.42	-.61	-.42	.74	235.15	.85
200.00	2.34	235.19	199.95	-2.01	-2.89	-2.01	3.53	235.17	1.49
300.00	3.78	225.48	299.81	-5.49	-6.92	-5.49	8.83	231.57	1.53
400.00	4.35	228.56	399.56	-10.31	-12.11	-10.31	15.91	229.60	.61
500.00	3.48	224.81	499.32	-14.97	-17.10	-14.97	22.73	228.78	.91
600.00	2.87	212.43	599.17	-19.24	-20.58	-19.24	28.17	226.92	.91
700.00	2.17	186.38	699.08	-23.24	-22.13	-23.24	32.09	223.60	1.32
800.00	2.07	180.08	799.01	-26.92	-22.34	-26.92	34.99	219.69	.25
900.00	1.93	173.86	898.95	-30.40	-22.17	-30.40	37.63	216.09	.26

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
1000.00	1.72	169.19	998.90	-33.55	-21.70	-33.55	39.96	212.90	.26
1100.00	1.58	176.23	1098.86	-36.40	-21.33	-36.40	42.19	210.37	.25
1200.00	1.60	169.19	1198.82	-39.15	-20.98	-39.15	44.42	208.19	.20
1300.00	1.48	168.16	1298.78	-41.78	-20.45	-41.78	46.52	206.08	.12
1400.00	1.63	173.39	1398.74	-44.46	-20.02	-44.46	48.76	204.25	.21
1500.00	2.06	176.58	1498.69	-47.67	-19.75	-47.67	51.60	202.51	.44
1600.00	1.87	177.69	1598.63	-51.09	-19.58	-51.09	54.72	200.97	.19
1700.00	1.70	178.55	1698.59	-54.20	-19.48	-54.20	57.60	199.76	.17
1800.00	1.54	183.56	1798.55	-57.03	-19.52	-57.03	60.28	198.90	.21
1900.00	1.43	181.67	1898.51	-59.62	-19.64	-59.62	62.77	198.24	.12
2000.00	1.32	180.55	1998.48	-62.02	-19.69	-62.02	65.07	197.61	.11
2100.00	1.37	179.62	2098.46	-64.36	-19.69	-64.36	67.31	197.01	.05
2200.00	1.17	185.50	2198.43	-66.58	-19.78	-66.58	69.45	196.55	.24
2300.00	1.21	199.33	2298.41	-68.59	-20.23	-68.59	71.51	196.43	.29
2400.00	1.18	206.92	2398.39	-70.50	-21.05	-70.50	73.58	196.62	.16
2500.00	1.02	202.96	2498.37	-72.24	-21.86	-72.24	75.47	196.84	.18
2600.00	.85	198.78	2598.36	-73.76	-22.45	-73.76	77.10	196.92	.18
2700.00	.85	206.69	2698.34	-75.13	-23.02	-75.13	78.57	197.03	.12
2800.00	.66	213.02	2798.34	-76.27	-23.66	-76.27	79.86	197.24	.21
2900.00	.26	227.84	2898.33	-76.91	-24.15	-76.91	80.61	197.43	.41
3000.00	.36	275.12	2998.33	-77.03	-24.63	-77.03	80.87	197.73	.26
3100.00	.09	279.76	3098.33	-76.99	-25.02	-76.99	80.95	198.00	.27
3200.00	.19	320.63	3198.33	-76.85	-25.20	-76.85	80.88	198.16	.14
3300.00	.25	345.00	3298.33	-76.51	-25.36	-76.51	80.60	198.34	.11
3400.00	.34	340.56	3398.33	-76.02	-25.52	-76.02	80.19	198.56	.09
3500.00	.44	353.89	3498.33	-75.36	-25.66	-75.36	79.61	198.80	.13
3600.00	.40	337.82	3598.32	-74.65	-25.83	-74.65	78.99	199.09	.12
3700.00	.53	3.12	3698.32	-73.87	-25.94	-73.87	78.29	199.35	.24
3800.00	.72	340.71	3798.31	-72.81	-26.12	-72.81	77.36	199.73	.31

Surface - 6996' M.D. (Rate Gyro) File: Y:\WINSER~1\2014SU~1\MEWBOU~1\MO\RUGER3~2\1H.SVY

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
3900.00	.96	335.81	3898.30	-71.46	-26.67	-71.46	76.27	200.47	.25
4000.00	1.59	323.19	3998.28	-69.58	-27.84	-69.58	74.94	201.81	.69
4100.00	1.86	315.38	4098.23	-67.31	-29.81	-67.31	73.62	203.89	.36
4200.00	2.43	312.23	4198.16	-64.73	-32.52	-64.73	72.45	206.68	.58
4300.00	2.92	304.42	4298.05	-61.87	-36.20	-61.87	71.68	210.33	.61
4400.00	2.88	304.93	4397.93	-58.99	-40.36	-58.99	71.48	214.38	.05
4500.00	2.93	305.82	4497.80	-56.06	-44.49	-56.06	71.57	218.44	.07
4600.00	2.95	307.24	4597.67	-53.00	-48.61	-53.00	71.92	222.52	.08
4700.00	3.05	307.60	4697.53	-49.82	-52.77	-49.82	72.57	226.64	.10
4800.00	3.17	305.67	4797.38	-46.59	-57.12	-46.59	73.71	230.80	.16
4900.00	3.31	304.67	4897.22	-43.33	-61.74	-43.33	75.43	234.94	.15
5000.00	3.30	301.93	4997.06	-40.17	-66.56	-40.17	77.74	238.89	.16
5100.00	3.45	299.73	5096.88	-37.16	-71.61	-37.16	80.68	242.58	.20
5200.00	3.67	297.95	5196.69	-34.16	-77.05	-34.16	84.29	246.09	.25
5300.00	4.26	288.16	5296.45	-31.51	-83.41	-31.51	89.16	249.31	.90
5400.00	4.76	285.58	5396.14	-29.23	-90.93	-29.23	95.52	252.18	.54
5500.00	4.61	284.80	5495.81	-27.09	-98.82	-27.09	102.46	254.67	.16
5600.00	2.93	274.44	5595.59	-25.87	-105.25	-25.87	108.38	256.19	1.81
5700.00	1.13	252.59	5695.52	-25.97	-108.74	-25.97	111.80	256.57	1.93
5800.00	.26	189.33	5795.51	-26.48	-109.72	-26.48	112.87	256.43	1.04
5900.00	.08	1.39	5895.51	-26.64	-109.75	-26.64	112.94	256.36	.34
6000.00	.15	334.85	5995.51	-26.45	-109.81	-26.45	112.95	256.46	.09
6100.00	.09	309.81	6095.51	-26.28	-109.92	-26.28	113.02	256.55	.08
6200.00	.04	237.11	6195.51	-26.25	-110.01	-26.25	113.10	256.58	.09
6300.00	.16	174.19	6295.51	-26.41	-110.03	-26.41	113.15	256.50	.15
6400.00	.17	172.40	6395.51	-26.69	-109.99	-26.69	113.19	256.36	.01
6500.00	.19	160.29	6495.51	-27.00	-109.92	-27.00	113.19	256.20	.04
6600.00	.15	139.12	6595.51	-27.25	-109.78	-27.25	113.11	256.06	.07
6700.00	.21	143.62	6695.51	-27.50	-109.58	-27.50	112.98	255.91	.06

Surface - 6996' M.D. (Rate Gyro) File: Y:\WINSER~1\2014SU~1\MEWBOU~1\MO\RUGER3~2\1H.SVY

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
6800.00	.14	150.97	6795.51	-27.75	-109.41	-27.75	112.88	255.77	.07
6900.00	.14	161.26	6895.51	-27.98	-109.32	-27.98	112.84	255.65	.03
Last Survey Depth Recorded									
6996.00	.11	207.96	6991.51	-28.17	-109.32	-28.17	112.89	255.55	.11