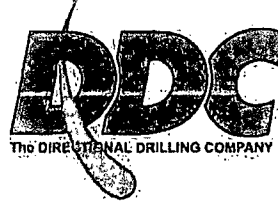


30-15-42595

Company Name: Mewbourne Oil Co
Ruger 31 B3EH Federal #2H
Eddy County, New Mexico
Rig: Patterson #46
Created By: Kaleigh DeCordova
Date: 11/04/2014

Mewbourne Oil Company



Ruger 31 B3EH Federal #2H 313595
Eddy County, New Mexico
Q141097 & WT-141050
Design #2 - Tie into Gyo

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 B3EH Federal #2H

Ground Level: 5197.0
Northing: 688417.30 Easting: 688417.30
Latitude: 32° 37' 11.812 N Longitude: 104° 6' 22.135 W



Azimuths to Grid North
Correction: 7.34°
Magnetic Field
Strength: 48458.9nT
Dip Angle: 60.37°
Date: 10/22/2014
Model: IGRF2010

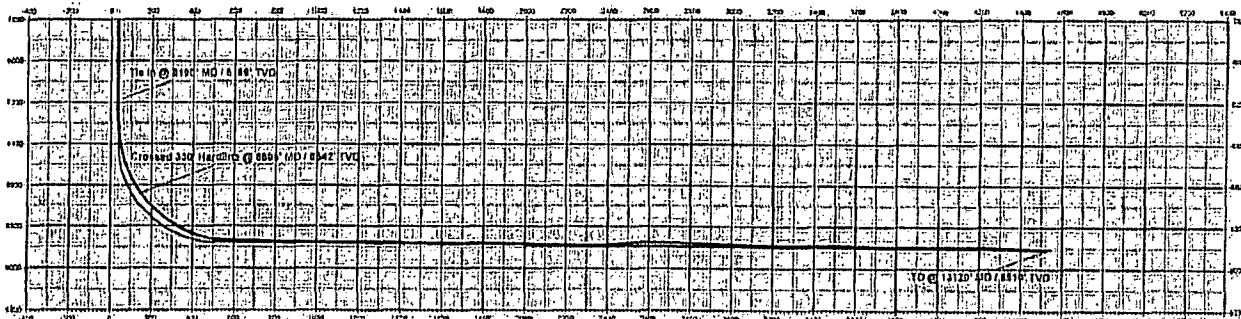
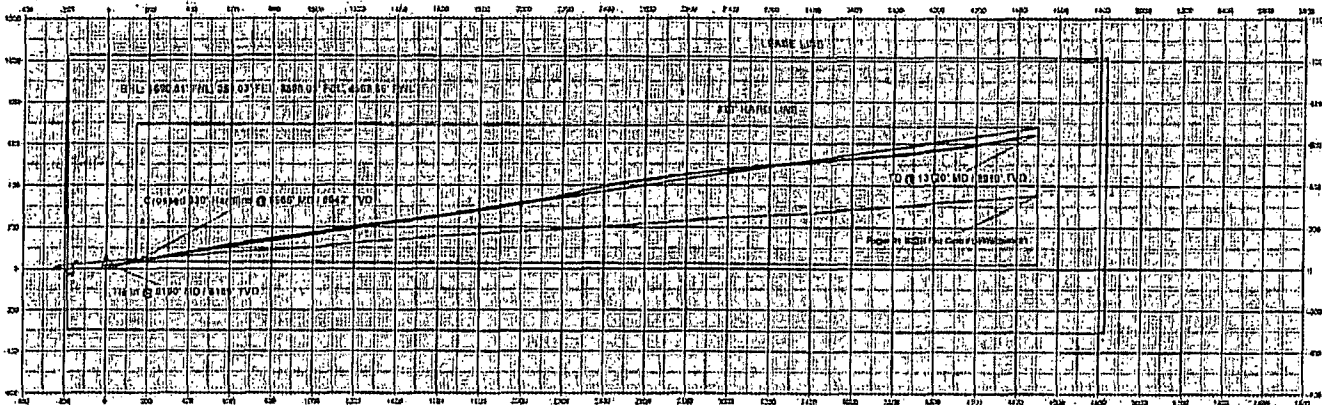
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FBHL Ruger 31 B3EH Federal #2H G01	8807.0	679.3	4500.9	589323.23	589948.18	32° 37' 11.812 N	104° 6' 22.135 W

plan hits target center

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
6190.0	0.90	46.14	6189.4	14.1	32.2	31.9	80.3	Tie in @ 6180' MD / 8160' TVD
6665.9	36.87	81.03	6641.5	36.4	144.0	147.9	194.8	Crossed 330° Hardline @ 6668' MD / 8842' TVD
13120.0	87.60	80.80	8908.8	638.9	4477.8	4523.0	4572.9	TD @ 13120' MD / 8910' TVD



Vertical Section at 61.42° (200 usf/in)

Mewbourne Oil Co

Eddy County, New Mexico

Sec 31, T9S, R9E

Ruger 31 B3EH Federal #2H

Wellbore #1

Design: Wellbore #1

DDC Survey Report

04 November, 2014



Survey Report



Company:	Newbourne Oil Co.	Local Co-ordinate Reference:	Well Ruger 31 B3EH Federal #2H
Project:	Eddy County, New Mexico	TVD Reference:	Well @ 3317.0usft (Patterson #46)
Site:	Sec 31 T9S, R9E	MD Reference:	Well @ 3317.0usft (Patterson #46)
Well:	Ruger 31 B3EH Federal #2H	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 B3EH Federal #2H						
Well Position:	+N-S	0.0 usft	Northing:	588,643.90 usft	Latitude:	32° 37' 5.182 N
	+E-W	0.0 usft	Easting:	565,447.30 usft	Longitude:	104° 7' 14.777 W
Position Uncertainty:	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,297.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/22/2014	7.46	60.37	48,459

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	81.42	

Survey Program		Date 11/4/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	8,190.0	GYRO (Wellbore #1)	Good_gyro	Good Gyro
8,307.0	13,120.0	MWD (Wellbore #1)	MWD default	MWD - Standard

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	0.53	337.55	100.0	0.4	-0.2	-0.1	0.53	0.53	0.00
200.0	1.10	318.64	200.0	1.6	-1.0	-0.7	0.62	0.57	-18.91
300.0	1.04	337.19	300.0	3.1	-2.0	-1.5	0.35	-0.06	18.55
400.0	0.49	334.48	400.0	4.4	-2.5	-1.8	0.55	-0.55	-2.71
500.0	0.41	333.20	500.0	5.1	-2.9	-2.1	0.08	-0.08	-1.28
600.0	1.61	61.59	599.9	6.0	-1.8	-0.9	1.65	1.20	88.39
700.0	2.15	69.20	699.9	7.4	1.2	2.3	0.59	0.54	7.61
800.0	2.06	71.17	799.9	8.6	4.7	5.9	0.12	-0.09	1.97
900.0	1.90	70.37	899.8	9.8	7.9	9.3	0.16	-0.16	-0.80

Survey Report



Company:	Mewbourne Oil Co.	Local Co-ordinate Reference:	Well Ruger 31 B3EH Federal #2H
Project:	Eddy County New Mexico	TVD Reference:	Well @ 3317.0usft (Patterson #46)
Site:	Sec 31 T9S R9E	MD Reference:	Well @ 3317.0usft (Patterson #46)
Well:	Ruger 31 B3EH Federal #2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Datbase:	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	1.85	75.02	999.7	10.7	11.0	12.5	0.16	-0.05	4.65
1,100.0	1.50	81.55	1,099.7	11.3	13.9	15.4	0.40	-0.35	6.53
1,200.0	1.27	88.76	1,199.6	11.6	16.3	17.8	0.29	-0.23	7.21
1,300.0	1.06	98.41	1,299.6	11.5	18.3	19.8	0.29	-0.21	9.65
1,400.0	0.81	107.84	1,399.6	11.1	19.9	21.3	0.29	-0.25	9.43
1,500.0	0.70	105.06	1,499.6	10.7	21.2	22.5	0.12	-0.11	-2.78
1,600.0	0.99	92.40	1,599.6	10.5	22.6	23.9	0.34	0.29	-12.66
1,700.0	0.86	91.30	1,699.6	10.5	24.2	25.5	0.13	-0.13	-1.10
1,800.0	0.59	52.40	1,799.6	10.8	25.4	26.7	0.55	-0.27	-38.90
1,900.0	0.75	57.04	1,899.6	11.4	26.4	27.8	0.17	0.16	4.64
2,000.0	0.62	47.30	1,999.5	12.2	27.3	28.8	0.17	-0.13	-9.74
2,100.0	0.44	56.42	2,099.5	12.7	28.0	29.8	0.20	-0.18	9.12
2,200.0	0.26	33.51	2,199.5	13.2	28.5	30.1	0.22	-0.18	-22.91
2,300.0	0.56	40.54	2,299.5	13.7	28.9	30.6	0.30	0.30	7.03
2,400.0	0.61	11.67	2,399.5	14.6	29.3	31.2	0.30	0.05	-28.87
2,500.0	0.54	14.30	2,499.5	15.6	29.6	31.6	0.07	-0.07	2.63
2,600.0	0.57	13.80	2,599.5	16.5	29.8	31.9	0.03	0.03	-0.50
2,700.0	0.52	22.29	2,699.5	17.4	30.1	32.3	0.09	-0.05	8.49
2,800.0	0.74	353.60	2,799.5	18.5	30.2	32.6	0.38	0.22	-28.69
2,900.0	0.91	348.40	2,899.5	19.9	30.0	32.6	0.19	0.17	-5.20
3,000.0	0.65	345.19	2,999.5	21.2	29.6	32.5	0.26	-0.26	-3.21
3,100.0	0.54	305.98	3,099.5	22.1	29.1	32.1	0.41	-0.11	-39.21
3,200.0	0.37	219.52	3,199.5	22.1	28.5	31.5	0.64	-0.17	-86.46
3,300.0	0.29	45.52	3,299.5	22.0	28.5	31.5	0.66	-0.08	-174.00
3,400.0	0.26	288.50	3,399.5	22.3	28.5	31.5	0.47	-0.03	-117.02
3,500.0	0.25	262.32	3,499.5	22.3	28.0	31.1	0.12	-0.01	-26.18
3,600.0	0.05	182.91	3,599.5	22.2	27.8	30.8	0.25	-0.20	-79.41
3,700.0	0.38	281.79	3,699.5	22.3	27.5	30.5	0.39	0.33	98.88
3,800.0	0.42	208.92	3,799.5	22.0	27.0	30.0	0.48	0.04	-72.87
3,900.0	0.31	184.42	3,899.5	21.4	26.8	29.7	0.19	-0.11	-24.50
4,000.0	0.30	188.43	3,999.5	20.9	26.7	29.6	0.02	-0.01	4.01
4,100.0	0.26	211.48	4,099.5	20.4	26.6	29.3	0.12	-0.04	23.05
4,200.0	0.39	164.39	4,199.5	19.9	26.6	29.2	0.29	0.13	-47.09
4,300.0	0.22	65.20	4,299.5	19.7	26.8	29.5	0.48	-0.17	-99.19
4,400.0	0.45	199.34	4,399.5	19.4	26.9	29.5	0.62	0.23	134.14
4,500.0	0.53	128.84	4,499.5	18.7	27.1	29.6	0.57	0.08	-70.50
4,600.0	0.27	40.54	4,599.5	18.6	27.6	30.1	0.59	-0.26	-88.30
4,700.0	0.24	337.37	4,699.5	19.0	27.7	30.2	0.27	-0.03	-63.17
4,800.0	0.67	272.85	4,799.5	19.2	27.0	29.6	0.61	0.43	-64.52
4,900.0	0.85	226.42	4,899.4	18.7	25.9	28.4	0.62	0.18	-46.43
5,000.0	0.64	172.09	4,999.4	17.6	25.4	27.8	0.71	-0.21	-54.33
5,100.0	0.44	101.80	5,099.4	17.0	25.9	28.1	0.64	-0.20	-70.29
5,200.0	0.43	79.76	5,199.4	17.0	26.6	28.9	0.17	-0.01	-22.04

Survey Report



Company:	Mewbourne Oil Co	Local Co-ordinate Reference:	Well Ruger 31 B3EH Federal #2H
Project:	Eddy County, New Mexico	TVD Reference:	Well @ 3317.0usft (Patterson #46)
Site:	Sec 31, T9S, R9E	MD Reference:	Well @ 3317.0usft (Patterson #46)
Well:	Ruger 31 B3EH Federal #2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

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	0.54	116.70	5,299.4	16.9	27.4	29.6	0.32	0.11	36.94
5,400.0	0.20	19.09	5,399.4	16.8	27.9	30.1	0.60	-0.34	-97.61
5,500.0	0.21	317.26	5,499.4	17.1	27.8	30.1	0.21	0.01	-61.83
5,600.0	0.60	225.95	5,599.4	16.9	27.3	29.5	0.64	0.39	-91.31
5,700.0	0.52	234.95	5,699.4	16.3	26.6	28.7	0.12	-0.08	9.00
5,800.0	0.30	207.66	5,799.4	15.8	26.1	28.2	0.29	-0.22	-27.29
5,900.0	0.52	192.13	5,899.4	15.1	25.9	27.8	0.24	0.22	-15.53
6,000.0	0.51	195.38	5,999.4	14.2	25.7	27.5	0.03	-0.01	3.25
6,100.0	0.13	250.05	6,099.4	13.8	25.4	27.2	0.45	-0.38	54.67
6,200.0	0.34	176.85	6,199.4	13.4	25.3	27.1	0.33	0.21	-73.20
6,300.0	0.23	141.73	6,299.4	13.0	25.5	27.1	0.20	-0.11	-35.12
6,400.0	0.32	162.23	6,399.4	12.5	25.7	27.3	0.13	0.09	20.50
6,500.0	0.27	65.59	6,499.4	12.4	26.0	27.6	0.44	-0.05	-96.64
6,600.0	0.10	314.04	6,599.4	12.5	26.2	27.7	0.32	-0.17	-111.55
6,700.0	0.27	124.52	6,699.4	12.5	26.3	27.8	0.37	0.17	170.48
6,800.0	0.22	146.51	6,799.4	12.2	26.6	28.1	0.11	-0.05	21.99
6,900.0	0.17	39.28	6,899.4	12.1	26.8	28.3	0.32	-0.05	-107.23
7,000.0	0.06	337.56	6,999.4	12.3	26.9	28.4	0.15	-0.11	-61.72
7,100.0	0.27	81.00	7,099.4	12.4	27.1	28.6	0.29	0.21	103.44
7,200.0	0.27	60.39	7,199.4	12.5	27.5	29.1	0.10	0.00	-20.61
7,300.0	0.21	91.52	7,299.4	12.6	27.9	29.5	0.14	-0.06	31.13
7,400.0	0.33	142.66	7,399.4	12.4	28.3	29.8	0.26	0.12	51.14
7,500.0	0.23	101.14	7,499.4	12.1	28.6	30.1	0.22	-0.10	-41.52
7,600.0	0.62	60.70	7,599.4	12.4	29.3	30.8	0.47	0.39	-40.44
7,700.0	0.30	76.54	7,699.4	12.7	30.0	31.6	0.34	-0.32	15.84
7,800.0	0.22	1.75	7,799.4	12.9	30.3	31.9	0.32	-0.08	-74.79
7,900.0	0.41	53.29	7,899.4	13.3	30.6	32.2	0.32	0.19	51.54
8,000.0	0.47	97.43	7,999.4	13.5	31.3	32.9	0.34	0.06	44.14
8,100.0	0.12	354.27	8,099.4	13.6	31.7	33.3	0.51	-0.35	-103.16
Tie In @ 8190' MD / 8189' TVD									
8,190.0	0.90	46.14	8,189.4	14.1	32.2	33.9	0.92	0.87	57.62
8,307.0	1.40	85.80	8,306.4	14.9	34.3	36.1	0.78	0.43	33.90
8,339.0	4.90	91.00	8,338.3	14.9	36.0	37.8	10.96	10.94	16.25
8,371.0	7.70	87.50	8,370.1	14.9	39.5	41.3	8.83	8.75	-10.94
8,403.0	10.60	77.30	8,401.7	15.7	44.5	46.4	10.35	9.06	-31.88
8,434.0	13.90	75.60	8,432.0	17.2	50.9	52.9	10.71	10.65	-5.48
8,466.0	16.40	77.00	8,462.9	19.2	59.0	61.3	7.90	7.81	4.38
8,498.0	19.40	76.30	8,493.3	21.5	68.6	71.1	9.40	9.38	-2.19
8,530.0	22.40	76.60	8,523.2	24.2	79.7	82.4	9.38	9.38	0.94
8,562.0	25.20	77.30	8,552.5	27.1	92.3	95.3	8.79	8.75	2.19
8,593.0	28.00	79.10	8,580.2	29.9	106.9	109.2	9.40	9.03	5.81
8,626.0	31.70	80.10	8,608.8	32.9	122.0	125.6	11.31	11.21	3.03
8,658.0	35.90	81.20	8,635.4	35.7	139.6	143.4	13.26	13.13	3.44

Survey Report



Company:	Mewbourne Oil Co.	Local Co-ordinate Reference:	Well Ruger 31 B3EH Federal #2H
Project:	Eddy County, New Mexico	TVD Reference:	Well @ 3317.0usft (Patterson #46)
Site:	Sec.31, T9S, R9E	MD Reference:	Well @ 3317.0usft (Patterson #46)
Well:	Ruger 31 B3EH Federal #2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Datbase:	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)
Crossed 330° Hardline @ 8665' MD / 8642' TVD									
8,665.5	36.67	81.63	8,641.5	36.4	144.0	147.8	10.85	10.29	5.79
8,689.0	39.10	82.90	8,660.0	38.3	158.3	162.2	10.85	10.33	5.39
8,721.0	41.30	84.30	8,684.5	40.6	178.8	182.9	7.43	6.68	4.38
8,753.0	44.70	83.30	8,707.9	43.0	200.5	204.7	10.84	10.63	-3.13
8,785.0	48.00	82.20	8,729.9	45.9	223.5	227.8	10.61	10.31	-3.44
8,817.0	51.50	80.50	8,750.6	49.6	247.6	252.2	11.66	10.94	-5.31
8,849.0	54.20	79.40	8,769.9	54.1	272.7	277.7	8.87	8.44	-3.44
8,880.0	57.20	79.80	8,787.4	58.7	297.9	303.3	9.74	9.68	1.29
8,912.0	60.70	79.80	8,803.9	63.5	324.9	330.7	10.94	10.94	0.00
8,944.0	64.10	78.40	8,818.7	68.9	352.7	359.0	11.31	10.63	-4.38
8,976.0	68.30	78.70	8,831.6	74.7	381.4	388.3	13.15	13.13	0.94
9,007.0	71.40	78.40	8,842.3	80.5	409.9	417.3	10.04	10.00	-0.97
9,039.0	75.10	79.10	8,851.5	86.5	440.0	447.9	11.75	11.56	2.19
9,071.0	77.90	79.40	8,859.0	92.3	470.5	479.0	8.80	8.75	0.94
9,103.0	81.80	79.40	8,864.7	98.1	501.5	510.5	12.19	12.19	0.00
9,135.0	85.50	79.80	8,868.2	103.8	532.8	542.3	11.63	11.56	1.25
9,166.0	87.30	79.40	8,870.1	109.4	563.2	573.2	5.95	5.81	-1.29
9,198.0	89.20	80.50	8,871.1	115.0	594.7	605.2	6.86	5.94	3.44
9,230.0	89.90	81.50	8,871.4	120.0	626.3	637.2	3.81	2.19	3.13
9,264.0	89.00	81.90	8,872.0	129.2	689.6	701.2	1.54	-1.41	0.63
9,357.0	88.50	81.90	8,873.4	138.1	752.0	764.2	0.79	-0.79	0.00
9,421.0	88.30	81.90	8,875.1	147.1	815.3	828.1	0.31	-0.31	0.00
9,485.0	89.20	82.60	8,876.5	155.7	878.7	892.1	1.78	1.41	1.09
9,548.0	89.60	82.20	8,877.2	164.1	941.2	955.1	0.90	0.63	-0.63
9,612.0	89.40	81.90	8,877.8	172.9	1,004.5	1,019.1	0.56	-0.31	-0.47
9,675.0	89.40	81.50	8,878.4	182.0	1,066.9	1,082.1	0.63	0.00	-0.63
9,739.0	92.40	82.60	8,877.4	190.9	1,130.2	1,146.1	4.99	4.69	1.72
9,802.0	91.00	82.20	8,875.5	199.2	1,192.7	1,209.0	2.31	-2.22	-0.63
9,866.0	88.00	82.90	8,876.1	207.5	1,256.1	1,273.0	4.81	-4.69	1.09
9,929.0	88.20	82.60	8,878.2	215.4	1,318.6	1,336.0	0.57	0.32	-0.48
9,992.0	88.00	83.30	8,880.3	223.2	1,381.1	1,398.9	1.15	-0.32	1.11
10,056.0	89.00	82.90	8,882.0	230.8	1,444.6	1,462.8	1.68	1.56	-0.63
10,119.0	89.60	82.60	8,882.7	238.8	1,507.1	1,525.8	1.06	0.95	-0.48
10,183.0	89.40	82.20	8,883.3	247.3	1,570.5	1,589.8	0.70	-0.31	-0.63
10,247.0	89.70	81.90	8,883.8	256.1	1,633.9	1,653.8	0.66	0.47	-0.47
10,310.0	90.40	81.20	8,883.7	265.4	1,696.2	1,716.8	1.57	1.11	-1.11
10,374.0	90.60	80.50	8,883.2	275.5	1,759.4	1,780.8	1.14	0.31	-1.09
10,437.0	89.20	81.50	8,883.3	285.4	1,821.6	1,843.8	2.73	-2.22	1.59
10,500.0	88.70	81.50	8,884.4	294.7	1,883.9	1,906.8	0.79	-0.79	0.00
10,564.0	88.70	81.20	8,885.9	304.3	1,947.2	1,970.8	0.47	0.00	-0.47
10,627.0	88.50	80.80	8,887.4	314.2	2,009.4	2,033.8	0.71	-0.32	-0.63
10,691.0	88.50	80.10	8,889.1	324.8	2,072.5	2,097.7	1.09	0.00	-1.09
10,754.0	89.00	79.10	8,890.5	336.2	2,134.4	2,160.7	1.77	0.79	-1.59

Survey Report



Company:	Mowbourn Oil Co.	Local Co-ordinate Reference:	Well Ruger 31 B3EH Federal #2H
Project:	Eddy County, New Mexico	TVD Reference:	Well @ 3317.0usft (Patterson #46)
Site:	Sec 31 T9S R9E	MD Reference:	Well @ 3317.0usft (Patterson #46)
Well:	Ruger 31 B3EH Federal #2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

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)
10,817.0	89.00	78.40	8,891.6	348.5	2,196.2	2,223.6	1.11	0.00	-1.11
10,881.0	90.30	77.30	8,892.0	361.9	2,258.7	2,287.5	2.66	2.03	-1.72
10,913.0	89.70	77.30	8,892.0	369.0	2,290.0	2,319.4	1.88	-1.88	0.00
10,944.0	91.70	77.30	8,891.6	375.8	2,320.2	2,350.3	6.45	6.45	0.00
10,976.0	92.60	78.00	8,890.4	382.6	2,351.4	2,382.2	3.56	2.81	2.19
11,007.0	93.40	78.00	8,888.8	389.1	2,381.7	2,413.1	2.58	2.58	0.00
11,039.0	94.30	78.70	8,886.6	395.5	2,413.0	2,445.0	3.56	2.81	2.19
11,072.0	95.20	79.40	8,883.9	401.7	2,445.3	2,477.8	3.45	2.73	2.12
11,106.0	94.70	81.50	8,880.9	407.4	2,478.7	2,511.7	6.33	-1.47	6.18
11,138.0	93.30	81.90	8,878.7	412.0	2,510.3	2,543.6	4.55	-4.38	1.25
11,170.0	91.70	82.20	8,877.3	416.4	2,541.9	2,575.6	5.09	-5.00	0.94
11,201.0	89.70	82.90	8,876.9	420.4	2,572.7	2,606.6	6.84	-6.45	2.26
11,233.0	89.20	82.60	8,877.2	424.5	2,604.4	2,638.6	1.82	-1.56	-0.94
11,265.0	88.20	82.90	8,878.0	428.5	2,636.1	2,670.6	3.26	-3.13	0.94
11,297.0	88.00	83.30	8,879.0	432.3	2,667.9	2,702.5	1.40	-0.63	1.25
11,329.0	88.70	83.60	8,880.0	436.0	2,699.7	2,734.5	2.38	2.19	0.94
11,360.0	89.20	83.30	8,880.5	439.5	2,730.5	2,765.5	1.88	1.61	-0.97
11,392.0	89.00	82.20	8,881.0	443.6	2,762.2	2,797.5	3.49	-0.63	-3.44
11,424.0	88.30	82.60	8,881.8	447.8	2,793.9	2,829.4	2.52	-2.19	1.25
11,456.0	87.80	82.90	8,882.9	451.8	2,825.6	2,861.4	1.82	-1.56	0.94
11,488.0	88.00	82.90	8,884.0	455.8	2,857.4	2,893.4	0.63	0.63	0.00
11,519.0	88.30	82.60	8,885.0	459.7	2,888.1	2,924.4	1.37	0.97	-0.97
11,583.0	87.80	83.60	8,887.2	467.4	2,951.6	2,988.3	1.75	-0.78	1.56
11,647.0	87.80	82.90	8,889.7	474.9	3,015.1	3,052.2	1.09	0.00	-1.09
11,710.0	88.20	84.70	8,891.9	481.7	3,077.7	3,115.1	2.93	0.63	2.86
11,774.0	88.70	84.70	8,893.6	487.6	3,141.4	3,179.0	0.78	0.78	0.00
11,837.0	88.90	85.10	8,894.9	493.2	3,204.1	3,241.9	0.71	0.32	0.63
11,901.0	89.90	84.70	8,895.6	498.9	3,267.9	3,305.7	1.68	1.56	-0.63
11,964.0	90.40	85.10	8,895.4	504.5	3,330.6	3,368.6	1.02	0.79	0.63
12,027.0	90.60	85.10	8,894.9	509.9	3,393.4	3,431.5	0.32	0.32	0.00
12,091.0	89.90	85.80	8,894.6	514.9	3,457.2	3,495.3	1.55	-1.09	1.09
12,155.0	90.40	85.10	8,894.4	520.0	3,521.0	3,559.2	1.34	0.78	-1.09
12,217.0	88.50	85.10	8,895.0	525.3	3,582.8	3,621.0	3.06	-3.06	0.00
12,280.0	88.20	85.40	8,896.8	530.5	3,645.5	3,683.9	0.67	-0.48	0.48
12,344.0	88.00	85.40	8,899.0	535.7	3,709.3	3,747.7	0.31	-0.31	0.00
12,407.0	89.00	84.70	8,900.6	541.1	3,772.0	3,810.5	1.94	1.59	-1.11
12,471.0	90.60	84.30	8,900.8	547.2	3,835.7	3,874.4	2.58	2.50	-0.63
12,534.0	90.60	84.30	8,900.2	553.5	3,898.4	3,937.4	0.00	0.00	0.00
12,598.0	91.10	83.60	8,899.2	560.2	3,962.0	4,001.3	1.34	0.78	-1.09
12,661.0	90.60	82.60	8,898.3	567.8	4,024.6	4,064.3	1.77	-0.79	-1.59
12,725.0	90.60	81.90	8,897.6	576.4	4,088.0	4,128.2	1.09	0.00	-1.09
12,788.0	88.90	81.20	8,897.9	585.7	4,150.3	4,191.2	2.92	-2.70	-1.11
12,852.0	88.00	80.80	8,899.6	595.7	4,213.5	4,255.2	1.54	-1.41	-0.63

Survey Report



Company:	Mowbourn Oil Co.	Local Co-ordinate Reference:	Well Ruger 31 B3EH Federal #2H
Project:	Eddy County, New Mexico	TVD Reference:	Well @ 3317.0usft (Patterson #46)
Site:	Sec 31 T9S R9E	MD Reference:	Well @ 3317.0usft (Patterson #46)
Well:	Ruger 31 B3EH Federal #2H	North Reference:	Grid
Wellbore:	Wellbore #11	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #11	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)
12,915.0	88.00	80.80	8,901.8	605.8	4,275.6	4,318.2	0.00	0.00	0.00
12,979.0	87.80	80.50	8,904.2	616.1	4,338.8	4,382.1	0.56	-0.31	-0.47
13,065.0	87.60	80.80	8,907.6	630.1	4,423.5	4,468.0	0.42	-0.23	0.35
TD @ 13120' MD / 8910' TVD									
13,120.0	87.60	80.80	8,909.9	638.9	4,477.8	4,523.0	0.00	0.00	0.00

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/S (usft)	+E/W (usft)	
8,190.0	8,189.4	14.1	32.2	Tie In @ 8190' MD / 8189' TVD
8,665.5	8,641.5	36.4	144.0	Crossed 330' Hardline @ 8666' MD / 8642' TVD
13,120.0	8,909.9	638.9	4,477.8	TD @ 13120' MD / 8910' TVD

Checked By: _____ Approved By: _____ Date: _____



Job Number: SVMO-141405
 Company: Mewbourne Oil & Gas
 Lease/Well: Ruger 31 B3EH Federal 2H
 Location: Eddy County, NM
 Rig Name: Patterson #46
 RKB: 27'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 7.31°
 Grid: East To Grid North
 File name: S:\2014SU~1\MEWBOU~1\MOIRUGER3~2\B3EHFE~1\2H.SVY
 Date/Time: 22-Oct-14 / 15:47
 Curve Name: Surface - 8190' M.D. (Rate Gyro)

MS SURVEY

WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane 81.42

Vertical Section Referenced to Wellhead

Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
 Surface MD to 8190' MD is, to the best of
 our knowledge a true and accurate account of
 the well bore.
 Travis Pack 10/22/14
 MS Energy Services Date

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.53	337.55	100.00	.43	-.18	-.11	.46	337.55	.53
200.00	1.10	318.64	199.99	1.58	-.99	-.74	1.86	327.92	.62
300.00	1.04	337.19	299.97	3.13	-1.97	-1.48	3.70	327.79	.35
400.00	.49	334.48	399.96	4.35	-2.51	-1.83	5.03	330.05	.55
500.00	.41	333.20	499.96	5.06	-2.86	-2.07	5.81	330.57	.08
600.00	1.61	61.59	599.94	6.05	-1.78	-.86	6.30	343.59	1.65
700.00	2.15	69.20	699.89	7.38	1.21	2.30	7.48	9.30	.59
800.00	2.06	71.17	799.82	8.63	4.66	5.90	9.81	28.39	.12
900.00	1.90	70.37	899.76	9.77	7.93	9.29	12.58	39.06	.16

Measured Depth FT	Incl. Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
1000.00	1.85	75.02	999.71	10.74	11.05	12.52	15.41	45.81	.16
1100.00	1.50	81.55	1099.67	11.35	13.90	15.44	17.94	50.77	.40
1200.00	1.27	88.76	1199.64	11.57	16.30	17.85	19.99	54.65	.29
1300.00	1.06	98.41	1299.62	11.45	18.33	19.83	21.61	57.99	.29
1400.00	.81	107.84	1399.60	11.10	19.91	21.35	22.80	60.86	.29
1500.00	.70	105.06	1499.60	10.73	21.18	22.54	23.74	63.13	.12
1600.00	.99	92.40	1599.58	10.53	22.63	23.95	24.96	65.04	.34
1700.00	.86	91.30	1699.57	10.48	24.24	25.53	26.41	66.62	.13
1800.00	.59	52.40	1799.56	10.78	25.40	26.72	27.59	67.01	.55
1900.00	.75	57.04	1899.56	11.45	26.36	27.77	28.74	66.53	.17
2000.00	.62	47.30	1999.55	12.17	27.30	28.81	29.89	65.98	.17
2100.00	.44	56.42	2099.55	12.75	28.02	29.61	30.79	65.54	.20
2200.00	.26	33.51	2199.54	13.15	28.47	30.11	31.36	65.21	.22
2300.00	.56	40.54	2299.54	13.71	28.91	30.63	32.00	64.63	.30
2400.00	.61	11.67	2399.54	14.60	29.34	31.19	32.77	63.54	.30
2500.00	.54	14.30	2499.53	15.58	29.56	31.55	33.41	62.21	.07
2600.00	.57	13.80	2599.53	16.52	29.79	31.93	34.07	60.99	.03
2700.00	.52	22.29	2699.52	17.42	30.09	32.35	34.77	59.92	.09
2800.00	.74	353.60	2799.52	18.49	30.19	32.61	35.40	58.52	.38
2900.00	.91	348.40	2899.51	19.91	29.95	32.59	35.96	56.39	.19
3000.00	.65	345.19	2999.50	21.23	29.65	32.49	36.47	54.39	.26
3100.00	.54	305.98	3099.49	22.06	29.12	32.09	36.53	52.86	.41
3200.00	.37	219.52	3199.49	22.08	28.54	31.51	36.08	52.26	.64
3300.00	.29	45.52	3299.49	22.01	28.51	31.48	36.02	52.33	.66
3400.00	.26	288.50	3399.49	22.26	28.48	31.48	36.15	51.98	.47
3500.00	.25	262.32	3499.49	22.30	28.05	31.06	35.83	51.50	.12
3600.00	.05	182.91	3599.49	22.23	27.83	30.83	35.62	51.38	.25
3700.00	.38	281.79	3699.49	22.26	27.50	30.51	35.38	51.02	.39
3800.00	.42	208.92	3799.48	22.00	27.00	29.98	34.83	50.82	.48

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
3900.00	.31	184.42	3899.48	21.41	26.80	29.69	34.30	51.38	.19
4000.00	.30	188.43	3999.48	20.88	26.74	29.56	33.93	52.01	.02
4100.00	.26	211.48	4099.48	20.43	26.58	29.33	33.53	52.46	.12
4200.00	.39	164.39	4199.48	19.91	26.56	29.23	33.19	53.14	.29
4300.00	.22	65.20	4299.48	19.66	26.82	29.46	33.26	53.76	.48
4400.00	.45	199.34	4399.48	19.37	26.87	29.46	33.12	54.21	.62
4500.00	.53	128.84	4499.47	18.71	27.10	29.59	32.93	55.37	.57
4600.00	.27	40.54	4599.47	18.60	27.61	30.08	33.29	56.03	.59
4700.00	.24	337.37	4699.47	18.97	27.68	30.20	33.56	55.57	.27
4800.00	.67	272.85	4799.47	19.20	27.02	29.58	33.14	54.61	.61
4900.00	.85	226.42	4899.46	18.71	25.90	28.40	31.95	54.15	.62
5000.00	.64	172.09	4999.45	17.65	25.44	27.79	30.96	55.25	.71
5100.00	.44	101.80	5099.45	17.02	25.89	28.14	30.98	56.68	.64
5200.00	.43	79.76	5199.45	17.01	26.63	28.87	31.60	57.44	.17
5300.00	.54	116.70	5299.44	16.86	27.43	29.63	32.19	58.42	.32
5400.00	.20	19.09	5399.44	16.81	27.90	30.10	32.58	58.93	.60
5500.00	.21	317.26	5499.44	17.11	27.84	30.08	32.68	58.42	.21
5600.00	.60	225.95	5599.44	16.88	27.34	29.55	32.13	58.30	.64
5700.00	.52	234.95	5699.43	16.26	26.59	28.72	31.17	58.55	.12
5800.00	.30	207.66	5799.43	15.77	26.09	28.15	30.49	58.86	.29
5900.00	.52	192.13	5899.43	15.09	25.88	27.84	29.96	59.75	.24
6000.00	.51	195.38	5999.42	14.22	25.66	27.50	29.34	61.01	.03
6100.00	.13	250.05	6099.42	13.75	25.44	27.21	28.92	61.61	.45
6200.00	.34	176.85	6199.42	13.42	25.35	27.07	28.68	62.11	.33
6300.00	.23	141.73	6299.42	12.96	25.49	27.14	28.60	63.05	.20
6400.00	.32	162.23	6399.42	12.54	25.70	27.28	28.59	63.99	.13
6500.00	.27	65.59	6499.42	12.37	26.00	27.55	28.79	64.56	.44
6600.00	.10	314.04	6599.42	12.53	26.15	27.73	29.00	64.40	.32
6700.00	.27	124.52	6699.42	12.46	26.28	27.85	29.08	64.64	.37

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
6800.00	.22	146.51	6799.42	12.16	26.58	28.10	29.23	65.42	.11
6900.00	.17	39.28	6899.42	12.12	26.78	28.29	29.40	65.66	.32
7000.00	.06	337.56	6999.42	12.28	26.86	28.39	29.53	65.43	.15
7100.00	.27	81.00	7099.42	12.36	27.07	28.61	29.76	65.45	.29
7200.00	.27	60.39	7199.42	12.52	27.51	29.07	30.22	65.53	.10
7300.00	.21	91.52	7299.41	12.63	27.89	29.47	30.62	65.64	.14
7400.00	.33	142.66	7399.41	12.40	28.25	29.79	30.85	66.31	.26
7500.00	.23	101.14	7499.41	12.13	28.62	30.11	31.09	67.04	.22
7600.00	.62	60.70	7599.41	12.35	29.29	30.81	31.79	67.13	.47
7700.00	.30	76.54	7699.41	12.68	30.02	31.57	32.59	67.10	.34
7800.00	.22	1.75	7799.41	12.93	30.28	31.87	32.93	66.87	.32
7900.00	.41	53.29	7899.40	13.34	30.57	32.22	33.36	66.43	.32
8000.00	.47	97.43	7999.40	13.50	31.27	32.93	34.06	66.65	.34
8100.00	.12	354.27	8099.40	13.55	31.66	33.33	34.44	66.83	.51
Last Survey Depth Recorded 7									
8190.00	.90	46.14	8189.40	14.13	32.16	33.91	35.13	66.28	.92