

Company Name: Mewbourne Oil Company
Cabra Nino 11 B3MD State Com #1H
Lea County, New Mexico (Nad 83)
Rig: Patterson #243
Created By: Shane Robbins
Date: 6/7/2017

Cabra Nino 11 B3MD State Com #1H
Lea County, New Mexico (Nad 83)
Q170914 & WT-170775
Design #2



PROJECT DETAILS: Lea County, New Mexico (Nad 83)

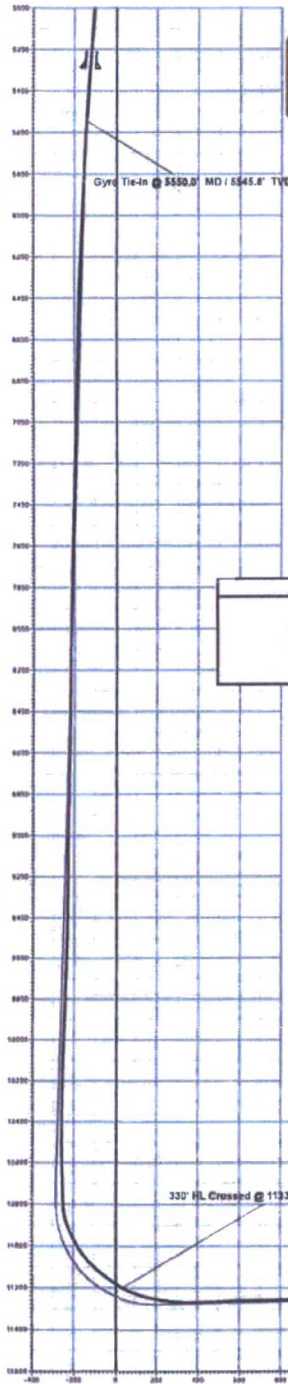
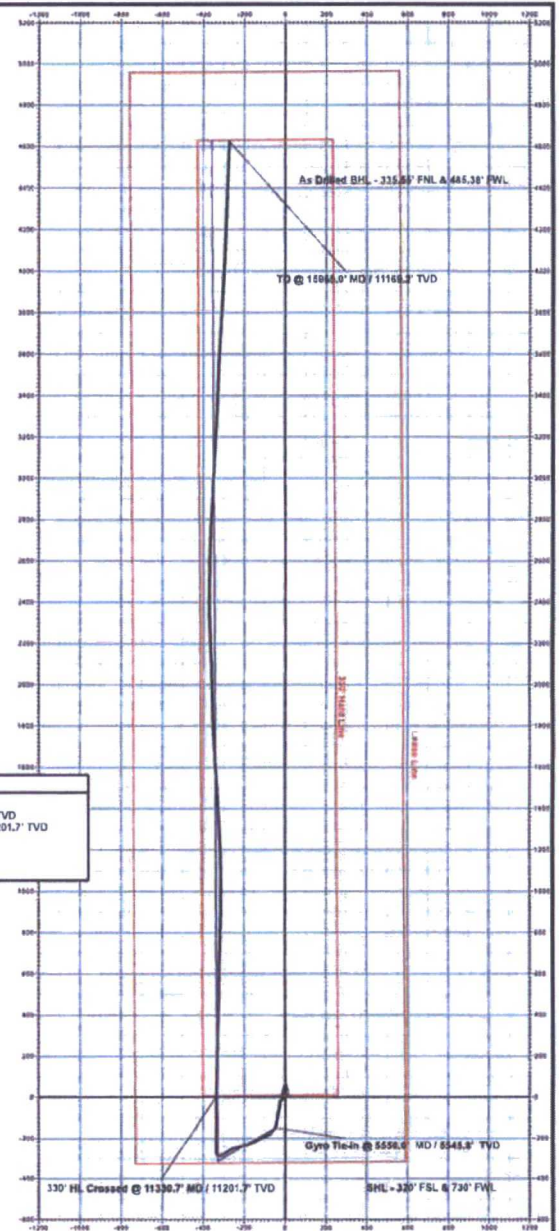
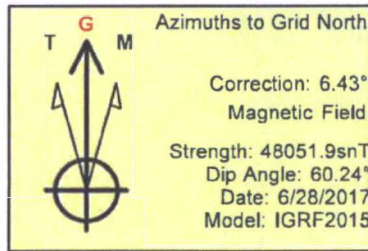
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

WELL DETAILS: Cabra Nino 11 B3MD State Com #1H

+N-S		+E-W		Northing		Easting		Ground Level		Latitude		Longitude	
6.0	6.0	610326.70	614929.40	3532.0	32° 33' 58.419 N	103° 26' 48.810 W							

ANNOTATIONS

MD	Inc	Az	TVD	+N-S	+E-W	Vsect	Departure	Annotation
5550.0	4.01	205.89	5545.8	-147.6	-50.0	-143.4	166.0	Gyro Tie-In @ 5550.0' MD / 5545.8' TVD
11330.7	62.47	0.58	11201.7	7.1	-333.3	32.8	784.2	330° HL Crossed @ 11330.7' MD / 11201.7' TVD
15965.0	91.80	3.10	11169.2	4624.1	-272.5	4631.3	8405.1	TD @ 15965.0' MD / 11169.2' TVD



330° HL Crossed @ 11330.7' MD / 11201.7' TVD

TD @ 15965.0' MD / 11169.2' TVD

Vertical Section at 355.58° (200 usft/in)



Mewbourne Oil Company

Lea County, New Mexico (Nad 83)

Sec 11, T22S, R34E

Cabra Nino 11 B3MD State Com #1H

Wellbore #1

Design: Wellbore #1

QES Survey Report

07 August, 2017





Survey Report



Company: Mewbourne Oil Company
Project: Lea County, New Mexico (Nad 83)
Site: Sec 11, T22S, R34E
Well: Cabra Nino 11 B3MD State Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Cabra Nino 11 B3MD State Com #1H
TVD Reference: WELL @ 3559.0usft (Patterson #243)
MD Reference: WELL @ 3559.0usft (Patterson #243)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project Lea County, New Mexico (Nad 83)
Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

Site Sec 11, T22S, R34E

Site Position:
From: Map
Position Uncertainty: 0.0 usft
Northing: 510,326.70 usft
Easting: 814,929.40 usft
Slot Radius: 13-3/16 "
Latitude: 32° 23' 59.419 N
Longitude: 103° 26' 48.810 W
Grid Convergence: 0.48 °

Well Cabra Nino 11 B3MD State Com #1H

Well Position +N/-S 0.0 usft Northing: 510,326.70 usft Latitude: 32° 23' 59.419 N
+E/-W 0.0 usft Easting: 814,929.40 usft Longitude: 103° 26' 48.810 W
Position Uncertainty 0.0 usft Wellhead Elevation: 0.0 usft Ground Level: 3,532.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/28/2017	6.90	60.24	48,051.85586925

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	355.58

Survey Program Date 8/7/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	5,550.0	MS GYRO (Wellbore #1)	Good_gyro	Good Gyro
5,748.0	15,965.0	MWD Surveys (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	0.83	279.61	100.0	0.1	-0.7	0.2	0.83	0.83	0.00
200.0	0.71	285.86	200.0	0.4	-2.0	0.6	0.15	-0.12	6.25
300.0	0.93	279.30	300.0	0.7	-3.4	1.0	0.24	0.22	-6.56
400.0	0.64	261.58	400.0	0.8	-4.8	1.1	0.37	-0.29	-17.72
500.0	0.15	199.49	500.0	0.6	-5.4	1.0	0.59	-0.49	-62.09
600.0	0.09	153.66	600.0	0.4	-5.4	0.8	0.11	-0.06	-45.83
700.0	0.07	151.44	700.0	0.2	-5.3	0.6	0.02	-0.02	-2.22
800.0	0.05	283.27	800.0	0.2	-5.3	0.6	0.11	-0.02	131.83
900.0	0.06	286.12	900.0	0.2	-5.4	0.6	0.01	0.01	2.85



Survey Report



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Site: Sec 11, T22S, R34E
Well: Cabra Nino 11 B3MD State Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Cabra Nino 11 B3MD State Com #1H
TVD Reference: WELL @ 3559.0usft (Patterson #243)
MD Reference: WELL @ 3559.0usft (Patterson #243)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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	0.09	287.23	1,000.0	0.3	-5.5	0.7	0.03	0.03	1.11
1,100.0	0.05	358.23	1,100.0	0.3	-5.6	0.8	0.09	-0.04	71.00
1,200.0	0.06	348.97	1,200.0	0.4	-5.6	0.9	0.01	0.01	-9.26
1,300.0	0.07	27.24	1,300.0	0.5	-5.6	1.0	0.04	0.01	38.27
1,400.0	0.06	46.63	1,400.0	0.6	-5.6	1.0	0.02	-0.01	19.39
1,500.0	0.13	132.95	1,500.0	0.6	-5.4	1.0	0.14	0.07	86.32
1,600.0	0.13	163.26	1,600.0	0.4	-5.3	0.8	0.07	0.00	30.31
1,700.0	0.13	156.93	1,700.0	0.2	-5.2	0.6	0.01	0.00	-6.33
1,800.0	0.20	183.40	1,800.0	-0.1	-5.2	0.3	0.10	0.07	26.47
1,900.0	0.92	219.70	1,900.0	-0.9	-5.7	-0.5	0.77	0.72	36.30
2,000.0	1.59	220.45	1,999.9	-2.6	-7.1	-2.0	0.67	0.67	0.75
2,100.0	1.63	222.01	2,099.9	-4.7	-9.0	-4.0	0.06	0.04	1.56
2,200.0	1.64	220.70	2,199.9	-6.8	-10.9	-6.0	0.04	0.01	-1.31
2,300.0	1.67	221.98	2,299.8	-9.0	-12.8	-8.0	0.05	0.03	1.28
2,400.0	1.67	222.45	2,399.8	-11.2	-14.7	-10.0	0.01	0.00	0.47
2,500.0	1.64	222.97	2,499.7	-13.3	-16.7	-11.9	0.03	-0.03	0.52
2,600.0	1.65	223.42	2,599.7	-15.4	-18.7	-13.9	0.02	0.01	0.45
2,700.0	1.69	222.83	2,699.6	-17.5	-20.7	-15.8	0.04	0.04	-0.59
2,800.0	1.66	223.30	2,799.6	-19.6	-22.7	-17.8	0.03	-0.03	0.47
2,900.0	1.61	219.34	2,899.6	-21.8	-24.5	-19.8	0.12	-0.05	-3.96
3,000.0	1.35	209.32	2,999.5	-23.9	-26.0	-21.8	0.37	-0.26	-10.02
3,100.0	1.30	187.30	3,099.5	-26.0	-26.7	-23.9	0.51	-0.05	-22.02
3,200.0	1.27	184.57	3,199.5	-28.3	-27.0	-26.1	0.07	-0.03	-2.73
3,300.0	1.32	183.42	3,299.5	-30.5	-27.1	-28.3	0.06	0.05	-1.15
3,400.0	1.44	183.45	3,399.4	-32.9	-27.3	-30.7	0.12	0.12	0.03
3,500.0	1.58	183.64	3,499.4	-35.6	-27.4	-33.3	0.14	0.14	0.19
3,600.0	1.66	182.51	3,599.3	-38.4	-27.6	-36.1	0.09	0.08	-1.13
3,700.0	1.71	178.28	3,699.3	-41.3	-27.6	-39.1	0.13	0.05	-4.23
3,800.0	1.81	179.53	3,799.3	-44.4	-27.5	-42.1	0.11	0.10	1.25
3,900.0	1.99	195.03	3,899.2	-47.6	-28.0	-45.3	0.54	0.18	15.50
4,000.0	2.06	194.87	3,999.1	-51.1	-28.9	-48.7	0.07	0.07	-0.16
4,100.0	2.01	190.66	4,099.1	-54.5	-29.7	-52.1	0.16	-0.05	-4.21
4,200.0	2.03	194.66	4,199.0	-58.0	-30.4	-55.4	0.14	0.02	4.00
4,300.0	2.84	186.30	4,298.9	-62.1	-31.2	-59.5	0.88	0.81	-8.36
4,400.0	3.15	188.11	4,398.8	-67.3	-31.8	-64.7	0.32	0.31	1.81
4,500.0	3.30	194.82	4,498.6	-72.8	-32.9	-70.1	0.41	0.15	6.71
4,600.0	4.25	192.14	4,598.4	-79.2	-34.5	-76.3	0.97	0.95	-2.68
4,700.0	4.64	191.63	4,698.1	-86.8	-36.1	-83.8	0.39	0.39	-0.51
4,800.0	4.59	192.54	4,797.8	-94.7	-37.7	-91.5	0.09	-0.05	0.91
4,900.0	4.24	190.74	4,897.5	-102.2	-39.3	-98.9	0.38	-0.35	-1.80
5,000.0	4.03	188.45	4,997.2	-109.3	-40.5	-105.9	0.27	-0.21	-2.29
5,100.0	3.93	187.89	5,097.0	-116.2	-41.5	-112.6	0.11	-0.10	-0.56
5,200.0	4.36	189.38	5,196.7	-123.3	-42.6	-119.7	0.44	0.43	1.49



Survey Report



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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	4.13	192.56	5,296.5	-130.6	-44.0	-126.8	0.33	-0.23	3.18
5,400.0	4.16	197.30	5,396.2	-137.6	-45.8	-133.6	0.34	0.03	4.74
5,500.0	4.22	204.36	5,495.9	-144.4	-48.4	-140.2	0.52	0.06	7.06
Gyro Tie-In @ 5550.0' MD / 5545.8' TVD									
5,550.0	4.01	205.69	5,545.8	-147.6	-50.0	-143.4	0.46	-0.42	2.66
5,748.0	3.60	212.80	5,743.4	-159.1	-56.3	-154.3	0.32	-0.21	3.59
5,936.0	3.30	214.90	5,931.0	-168.5	-62.6	-163.2	0.17	-0.16	1.12
6,124.0	4.20	235.10	6,118.6	-176.9	-71.4	-170.9	0.84	0.48	10.74
6,311.0	4.40	240.70	6,305.1	-184.3	-83.2	-177.3	0.25	0.11	2.99
6,499.0	4.30	242.10	6,492.6	-191.1	-95.7	-183.2	0.08	-0.05	0.74
6,687.0	4.00	242.50	6,680.1	-197.5	-107.8	-188.6	0.16	-0.16	0.21
6,874.0	4.00	241.50	6,866.6	-203.6	-119.3	-193.8	0.04	0.00	-0.53
7,062.0	3.80	246.60	7,054.2	-209.2	-130.8	-198.5	0.21	-0.11	2.71
7,250.0	3.40	244.60	7,241.8	-214.1	-141.5	-202.5	0.22	-0.21	-1.06
7,437.0	3.30	243.60	7,428.5	-218.8	-151.4	-206.5	0.06	-0.05	-0.53
7,625.0	3.50	245.00	7,616.1	-223.7	-161.4	-210.6	0.12	0.11	0.74
7,812.0	3.10	250.10	7,802.8	-227.8	-171.4	-213.9	0.27	-0.21	2.73
8,000.0	3.50	248.50	7,990.5	-231.6	-181.5	-216.9	0.22	0.21	-0.85
8,187.0	3.30	251.60	8,177.2	-235.4	-191.9	-219.9	0.15	-0.11	1.66
8,375.0	2.70	256.00	8,364.9	-238.2	-201.3	-222.0	0.34	-0.32	2.34
8,562.0	2.90	257.50	8,551.7	-240.3	-210.2	-223.4	0.11	0.11	0.80
8,750.0	4.00	251.50	8,739.4	-243.4	-221.1	-225.6	0.62	0.59	-3.19
8,937.0	4.70	249.20	8,925.8	-248.2	-234.4	-229.4	0.39	0.37	-1.23
9,125.0	3.50	256.70	9,113.4	-252.2	-247.2	-232.4	0.70	-0.64	3.99
9,319.0	3.30	255.30	9,307.0	-255.0	-258.4	-234.3	0.11	-0.10	-0.72
9,507.0	2.60	235.60	9,494.8	-258.8	-267.1	-237.4	0.65	-0.37	-10.48
9,693.0	4.30	237.80	9,680.4	-264.9	-276.5	-242.8	0.92	0.91	1.18
9,881.0	3.30	233.40	9,868.0	-271.9	-286.8	-249.0	0.55	-0.53	-2.34
10,068.0	3.90	241.10	10,054.6	-278.2	-296.7	-254.5	0.41	0.32	4.12
10,256.0	4.00	240.60	10,242.2	-284.5	-308.0	-259.9	0.06	0.05	-0.27
10,443.0	2.90	253.90	10,428.9	-289.0	-318.2	-263.6	0.72	-0.59	7.11
10,631.0	3.40	304.90	10,616.6	-287.1	-327.4	-261.0	1.46	0.27	27.13
10,771.0	2.70	309.50	10,756.4	-282.6	-333.3	-256.1	0.53	-0.50	3.29
10,805.0	2.80	315.80	10,790.4	-281.5	-334.5	-254.9	0.94	0.29	18.53
10,836.0	5.60	342.50	10,821.3	-279.6	-335.5	-252.9	10.79	9.03	86.13
10,868.0	10.90	357.10	10,852.9	-275.0	-336.1	-248.3	17.68	16.56	45.63
10,899.0	16.80	0.40	10,883.0	-267.6	-336.3	-240.9	19.19	19.03	10.65
10,930.0	22.00	0.30	10,912.3	-257.3	-336.2	-230.7	16.77	16.77	-0.32
10,963.0	25.10	0.40	10,942.5	-244.1	-336.1	-217.5	9.39	9.39	0.30
10,994.0	27.80	1.50	10,970.3	-230.3	-335.9	-203.8	8.85	8.71	3.55
11,026.0	31.00	2.40	10,998.1	-214.6	-335.3	-188.2	10.09	10.00	2.81
11,057.0	34.00	1.90	11,024.3	-198.0	-334.7	-171.6	9.72	9.68	-1.61
11,089.0	38.00	0.30	11,050.2	-179.2	-334.4	-152.9	12.84	12.50	-5.00



Survey Report



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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)
11,120.0	42.40	0.40	11,073.8	-159.2	-334.2	-133.0	14.20	14.19	0.32
11,152.0	46.10	0.40	11,096.7	-136.9	-334.1	-110.7	11.56	11.56	0.00
11,183.0	49.30	0.80	11,117.6	-114.0	-333.8	-87.9	10.37	10.32	1.29
11,215.0	51.60	0.50	11,138.0	-89.3	-333.6	-63.3	7.22	7.19	-0.94
11,247.0	54.10	0.10	11,157.3	-63.8	-333.4	-37.9	7.88	7.81	-1.25
11,278.0	56.50	359.90	11,175.0	-38.3	-333.4	-12.5	7.76	7.74	-0.65
11,309.0	60.10	0.10	11,191.2	-11.9	-333.4	13.8	11.63	11.61	0.65
330' HL Crossed @ 11330.7' MD / 11201.7' TVD									
11,330.7	62.47	0.58	11,201.7	7.1	-333.3	32.8	11.11	10.94	2.21
11,341.0	63.60	0.80	11,206.3	16.3	-333.2	41.9	11.11	10.94	2.14
11,373.0	68.00	1.50	11,219.4	45.5	-332.6	71.0	13.89	13.75	2.19
11,404.0	71.60	1.30	11,230.2	74.5	-331.9	99.9	11.63	11.61	-0.65
11,436.0	73.80	0.80	11,239.7	105.1	-331.3	130.3	7.03	6.88	-1.56
11,468.0	76.30	0.40	11,247.9	136.0	-331.0	161.1	7.91	7.81	-1.25
11,499.0	78.60	0.60	11,254.7	166.3	-330.8	191.3	7.45	7.42	0.65
11,531.0	80.20	0.60	11,260.5	197.7	-330.4	222.6	5.00	5.00	0.00
11,563.0	82.40	1.00	11,265.4	229.3	-330.0	254.1	6.99	6.88	1.25
11,595.0	85.20	1.30	11,268.8	261.1	-329.4	285.7	8.80	8.75	0.94
11,610.0	86.40	1.70	11,269.9	276.1	-329.0	300.6	8.43	8.00	2.67
11,707.0	91.60	1.50	11,271.6	373.0	-326.3	397.0	5.36	5.36	-0.21
11,801.0	92.90	1.20	11,267.9	466.9	-324.0	490.5	1.42	1.38	-0.32
11,894.0	92.80	1.00	11,263.3	559.8	-322.3	582.9	0.24	-0.11	-0.22
11,988.0	90.50	1.70	11,260.6	653.7	-320.0	676.4	2.56	-2.45	0.74
12,082.0	90.60	1.50	11,259.7	747.7	-317.4	769.9	0.24	0.11	-0.21
12,176.0	91.80	1.50	11,257.7	841.6	-315.0	863.4	1.28	1.28	0.00
12,270.0	91.10	0.80	11,255.4	935.6	-313.1	956.9	1.05	-0.74	-0.74
12,363.0	93.10	359.80	11,252.0	1,028.5	-312.6	1,049.5	2.40	2.15	-1.08
12,457.0	91.30	358.70	11,248.3	1,122.4	-313.8	1,143.3	2.24	-1.91	-1.17
12,551.0	91.50	357.30	11,246.0	1,216.3	-317.1	1,237.1	1.50	0.21	-1.49
12,644.0	91.20	357.30	11,243.9	1,309.2	-321.5	1,330.1	0.32	-0.32	0.00
12,739.0	89.30	356.60	11,243.4	1,404.0	-326.5	1,425.0	2.13	-2.00	-0.74
12,832.0	89.70	356.10	11,244.3	1,496.9	-332.4	1,518.0	0.69	0.43	-0.54
12,926.0	90.60	356.10	11,244.0	1,590.6	-338.8	1,612.0	0.96	0.96	0.00
13,019.0	94.30	355.90	11,240.0	1,683.3	-345.3	1,704.9	3.98	3.98	-0.22
13,113.0	92.20	357.80	11,234.7	1,777.0	-350.5	1,798.7	3.01	-2.23	2.02
13,206.0	87.80	358.50	11,234.7	1,869.9	-353.5	1,891.6	4.79	-4.73	0.75
13,300.0	86.00	358.20	11,239.8	1,963.8	-356.2	1,985.4	1.94	-1.91	-0.32
13,394.0	91.30	358.70	11,242.0	2,057.7	-358.7	2,079.2	5.66	5.64	0.53
13,488.0	91.90	357.50	11,239.4	2,151.6	-361.8	2,173.1	1.43	0.64	-1.28
13,581.0	93.80	357.50	11,234.7	2,244.4	-365.9	2,265.9	2.04	2.04	0.00
13,676.0	91.90	0.10	11,230.0	2,339.2	-367.9	2,360.6	3.39	-2.00	2.74
13,769.0	91.40	359.80	11,227.3	2,432.2	-368.0	2,453.3	0.63	-0.54	-0.32
13,863.0	91.10	359.80	11,225.3	2,526.1	-368.3	2,547.0	0.32	-0.32	0.00
13,957.0	92.40	1.70	11,222.4	2,620.1	-367.1	2,640.6	2.45	1.38	2.02



Survey Report



Company: Mewbourne Oil Company
Project: Lea County, New Mexico (Nad 83)
Site: Sec 11, T22S, R34E
Well: Cabra Nino 11 B3MD State Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Cabra Nino 11 B3MD State Com #1H
TVD Reference: WELL @ 3559.0usft (Patterson #243)
MD Reference: WELL @ 3559.0usft (Patterson #243)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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)
14,051.0	92.40	1.90	11,218.5	2,714.0	-364.1	2,733.9	0.21	0.00	0.21
14,144.0	96.70	3.60	11,211.1	2,806.5	-359.7	2,825.9	4.97	4.62	1.83
14,238.0	93.30	3.80	11,202.9	2,900.0	-353.6	2,918.6	3.62	-3.62	0.21
14,332.0	90.80	2.60	11,199.6	2,993.8	-348.4	3,011.7	2.95	-2.66	-1.28
14,425.0	90.80	2.90	11,198.3	3,086.6	-343.9	3,104.0	0.32	0.00	0.32
14,520.0	92.10	3.40	11,195.9	3,181.5	-338.7	3,198.1	1.47	1.37	0.53
14,614.0	90.50	2.60	11,193.7	3,275.3	-333.8	3,291.3	1.90	-1.70	-0.85
14,708.0	86.90	1.90	11,195.9	3,369.2	-330.1	3,384.6	3.90	-3.83	-0.74
14,802.0	92.60	1.90	11,196.3	3,463.1	-327.0	3,478.0	6.06	6.06	0.00
14,896.0	95.20	2.90	11,189.9	3,556.8	-323.0	3,571.1	2.96	2.77	1.06
14,990.0	90.80	3.30	11,185.0	3,650.5	-318.0	3,664.1	4.70	-4.68	0.43
15,085.0	90.90	3.40	11,183.5	3,745.3	-312.4	3,758.3	0.15	0.11	0.11
15,179.0	91.40	3.60	11,181.7	3,839.1	-306.7	3,851.4	0.57	0.53	0.21
15,272.0	90.10	3.10	11,180.4	3,932.0	-301.2	3,943.5	1.50	-1.40	-0.54
15,366.0	89.40	2.70	11,180.9	4,025.8	-296.5	4,036.7	0.86	-0.74	-0.43
15,460.0	88.60	3.10	11,182.5	4,119.7	-291.7	4,129.9	0.95	-0.85	0.43
15,553.0	92.30	1.20	11,181.8	4,212.6	-288.2	4,222.3	4.47	3.98	-2.04
15,647.0	92.60	2.00	11,177.7	4,306.5	-285.6	4,315.7	0.91	0.32	0.85
15,741.0	90.90	2.00	11,174.9	4,400.4	-282.3	4,409.1	1.81	-1.81	0.00
15,835.0	91.40	2.20	11,173.0	4,494.3	-278.9	4,502.4	0.57	0.53	0.21
15,915.0	91.80	3.10	11,170.8	4,574.2	-275.2	4,581.8	1.23	0.50	1.13
TD @ 15965.0' MD / 11169.2' TVD									
15,965.0	91.80	3.10	11,169.2	4,624.1	-272.5	4,631.3	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,550.0	5,545.8	-147.6	-50.0	Gyro Tie-in @ 5550.0' MD / 5545.8' TVD
11,330.7	11,201.7	7.1	-333.3	330' HL Crossed @ 11330.7' MD / 11201.7' TVD
15,965.0	11,169.2	4,624.1	-272.5	TD @ 15965.0' MD / 11169.2' TVD

Checked By: _____ Approved By: _____ Date: _____



Job Number: SVMO-170507
 Company: Mewbourne
 Lease/Well: Cabra Nino 11 B3MD State Com 1H
 Location: Lea County, NM
 Rig Name: Patterson 243
 RKB: 26.6'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: Declination See Details Below
 Grid: East To Grid North
 File name: C:\WINSER-1\2017\MEWBOU-1\MO\CABRAN-1\11B3MD-1\1H.SVY
 Date/Time: 21-Jul-17 / 16:19
 Curve Name: Surface - 5550' M.D. (Rate Gyro)
 Lat: 32.399839 Long: -103.446892

MS Energy

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 355.58
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

Declination To True North: 6.94°
 Grid Convergence Factor: 0° 28' 30.01514"
 Total Correction Mag to Grid: 6.43°

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.83	279.61	100.00	.12	-.71	.18	.72	279.61	.83
200.00	.71	285.86	199.99	.41	-2.02	.57	2.07	281.48	.15
300.00	.93	279.30	299.98	.71	-3.42	.97	3.49	281.75	.24
400.00	.64	261.58	399.97	.76	-4.77	1.13	4.83	279.06	.37
500.00	.15	199.49	499.97	.56	-5.37	.97	5.40	275.91	.59
600.00	.09	153.66	599.97	.36	-5.38	.78	5.39	273.85	.11
700.00	.07	151.44	699.97	.24	-5.32	.65	5.32	272.56	.02
800.00	.05	283.27	799.97	.19	-5.33	.60	5.33	272.09	.11
900.00	.06	286.12	899.97	.22	-5.42	.64	5.43	272.31	.01
1000.00	.09	287.23	999.96	.26	-5.55	.68	5.55	272.65	.03
1100.00	.05	358.23	1099.96	.32	-5.62	.76	5.63	273.29	.09
1200.00	.06	348.97	1199.96	.42	-5.63	.85	5.65	274.25	.01

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
1300.00	.07	27.24	1299.96	.52	-5.62	.96	5.64	275.33	.04
1400.00	.06	46.63	1399.96	.61	-5.55	1.04	5.58	276.32	.02
1500.00	.13	132.95	1499.96	.57	-5.43	.99	5.46	276.03	.14
1600.00	.13	163.26	1599.96	.39	-5.31	.80	5.33	274.17	.07
1700.00	.13	156.93	1699.96	.17	-5.24	.58	5.24	271.91	.01
1800.00	.20	183.40	1799.96	-.10	-5.20	.30	5.20	268.85	.10
1900.00	.92	219.70	1899.96	-.90	-5.73	-.45	5.80	261.10	.77
2000.00	1.59	220.45	1999.93	-2.57	-7.14	-2.01	7.59	250.20	.67
2100.00	1.63	222.01	2099.89	-4.68	-8.99	-3.98	10.14	242.49	.06
2200.00	1.64	220.70	2199.85	-6.82	-10.88	-5.97	12.84	237.89	.04
2300.00	1.67	221.98	2299.81	-8.99	-12.78	-7.98	15.63	234.88	.05
2400.00	1.67	222.45	2399.77	-11.15	-14.74	-9.98	18.48	232.90	.01
2500.00	1.64	222.97	2499.73	-13.27	-16.70	-11.95	21.33	231.52	.03
2600.00	1.65	223.42	2599.69	-15.37	-18.67	-13.88	24.18	230.54	.02
2700.00	1.69	222.83	2699.64	-17.49	-20.66	-15.85	27.07	229.74	.04
2800.00	1.66	223.30	2799.60	-19.63	-22.65	-17.82	29.97	229.09	.03
2900.00	1.61	219.34	2899.56	-21.77	-24.54	-19.81	32.80	228.42	.12
3000.00	1.35	209.32	2999.53	-23.88	-26.00	-21.81	35.31	227.44	.37
3100.00	1.30	187.30	3099.50	-26.03	-26.73	-23.90	37.31	225.75	.51
3200.00	1.27	184.57	3199.48	-28.26	-26.96	-26.10	39.06	223.64	.07
3300.00	1.32	183.42	3299.45	-30.52	-27.11	-28.34	40.82	221.62	.06
3400.00	1.44	183.45	3399.42	-32.92	-27.26	-30.72	42.74	219.62	.12
3500.00	1.58	183.64	3499.39	-35.55	-27.42	-33.33	44.90	217.64	.14
3600.00	1.66	182.51	3599.35	-38.38	-27.57	-36.14	47.25	215.70	.09
3700.00	1.71	178.28	3699.30	-41.31	-27.59	-39.06	49.68	213.74	.13
3800.00	1.81	179.53	3799.26	-44.38	-27.53	-42.13	52.23	211.81	.11
3900.00	1.99	195.03	3899.20	-47.64	-27.97	-45.34	55.25	210.42	.54
4000.00	2.06	194.87	3999.14	-51.05	-28.88	-48.68	58.66	209.50	.07
4100.00	2.01	190.66	4099.08	-54.52	-29.67	-52.07	62.07	208.56	.16
4200.00	2.03	194.66	4199.01	-57.95	-30.44	-55.43	65.46	207.71	.14
4300.00	2.84	186.30	4298.92	-62.13	-31.16	-59.54	69.50	206.64	.88
4400.00	3.15	188.11	4398.79	-67.31	-31.82	-64.66	74.45	205.30	.32
4500.00	3.30	194.82	4498.63	-72.81	-32.94	-70.06	79.92	204.34	.41
4600.00	4.25	192.14	4598.41	-79.22	-34.46	-76.33	86.39	203.51	.97

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
4700.00	4.64	191.63	4698.11	-86.80	-36.05	-83.77	93.99	202.56	.39
4800.00	4.59	192.54	4797.79	-94.67	-37.74	-91.48	101.91	201.73	.09
4900.00	4.24	190.74	4897.49	-102.21	-39.30	-98.88	109.50	201.03	.38
5000.00	4.03	188.45	4997.23	-109.32	-40.50	-105.87	116.58	200.33	.27
5100.00	3.93	187.89	5096.99	-116.19	-41.49	-112.64	123.37	199.65	.11
5200.00	4.36	189.38	5196.73	-123.33	-42.58	-119.68	130.47	199.05	.44
5300.00	4.13	192.56	5296.45	-130.60	-43.98	-126.82	137.80	198.61	.33
5400.00	4.16	197.30	5396.19	-137.57	-45.84	-133.63	145.01	198.43	.34
5500.00	4.22	204.36	5495.92	-144.39	-48.44	-140.23	152.30	198.55	.52
Last Survey Depth Recorded									
5550.00	4.01	205.69	5545.79	-147.64	-49.96	-143.35	155.86	198.69	.46