

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 09 2017

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30-015-43496

Mewbourne Oil Company

Eddy County, New Mexico

Sec 28, T23S, R28E

Loving Townsite 21W2PA FEE #1H

Wellbore #1

Design: Wellbore #1

QES Survey Report

28 March, 2017



Survey Report



Company: Mewbourne Oil Company
Project: Eddy County, New Mexico
Site: Sec 28, T23S, R28E
Well: Loving Townsite 21 W2PA FEE #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Loving Townsite 21 W2PA FEE #1H
TVD Reference: WELL @ 3062.0usft (Patterson #243)
MD Reference: WELL @ 3062.0usft (Patterson #243)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM5002

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 28, T23S, R28E

Site Position:		Northing:	466,637.50 usft	Latitude:	32° 16' 57.565 N
From:	Map	Easting:	577,080.40 usft	Longitude:	104° 5' 2.093 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.13 °

Well Loving Townsite 21 W2PA FEE #1H

Well Position	+N/-S	0.0 usft	Northing:	466,637.50 usft	Latitude:	32° 16' 57.565 N
	+E/-W	0.0 usft	Easting:	577,080.40 usft	Longitude:	104° 5' 2.093 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,035.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/17/2017	7.23	60.04	47,955

Design Wellbore #1

Audit Notes:

Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	356.87

Survey Program Date 3/28/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	9,594.0	Gyro (Wellbore #1)	Good_gyro	Good Gyro
9,760.0	15,550.0	MWD Surveys (Gyro Tie-In) (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	0.29	76.53	100.0	0.1	0.2	0.0	0.29	0.29	0.00
200.0	1.24	47.25	200.0	0.9	1.3	0.8	1.00	0.95	-29.28
300.0	1.67	13.86	300.0	3.0	2.4	2.9	0.93	0.43	-33.39
400.0	2.19	338.54	399.9	6.2	2.1	6.1	1.27	0.52	-35.32
500.0	2.05	333.92	499.8	9.6	0.6	9.5	0.22	-0.14	-4.62
600.0	2.27	341.20	599.8	13.1	-0.8	13.1	0.35	0.22	7.28
700.0	2.03	327.89	699.7	16.4	-2.4	16.5	0.55	-0.24	-13.31
800.0	1.95	336.71	799.6	19.5	-4.0	19.7	0.32	-0.08	8.82
900.0	2.47	332.65	899.6	23.0	-5.7	23.3	0.54	0.52	-4.06

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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)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	2.89	358.34	999.5	27.4	-6.7	27.7	1.26	0.42	25.69
1,100.0	3.31	359.02	1,099.3	32.8	-6.9	33.1	0.42	0.42	0.68
1,200.0	3.38	355.65	1,199.1	38.6	-7.1	39.0	0.21	0.07	-3.37
1,300.0	3.28	349.74	1,299.0	44.4	-7.9	44.8	0.36	-0.10	-5.91
1,400.0	0.93	338.08	1,398.9	48.0	-8.7	48.4	2.38	-2.35	-11.66
1,500.0	0.18	254.91	1,498.9	48.7	-9.1	49.1	0.93	-0.75	-83.17
1,600.0	0.14	314.92	1,598.9	48.7	-9.4	49.2	0.16	-0.04	60.01
1,700.0	0.51	296.25	1,698.9	49.0	-9.9	49.5	0.38	0.37	-18.67
1,800.0	0.58	283.48	1,798.9	49.3	-10.8	49.8	0.14	0.07	-12.77
1,900.0	0.42	250.77	1,898.9	49.3	-11.6	49.9	0.32	-0.16	-32.71
2,000.0	0.65	136.13	1,998.9	48.8	-11.6	49.3	0.91	0.23	-114.64
2,100.0	0.71	125.57	2,098.9	48.0	-10.7	48.5	0.14	0.06	-10.56
2,200.0	1.10	147.67	2,198.9	46.8	-9.6	47.3	0.52	0.39	22.10
2,300.0	1.72	144.74	2,298.8	44.8	-8.3	45.2	0.62	0.62	-2.93
2,400.0	2.31	141.23	2,398.8	42.0	-6.1	42.3	0.60	0.59	-3.51
2,500.0	2.17	139.01	2,498.7	39.0	-3.6	39.2	0.16	-0.14	-2.22
2,600.0	2.51	134.36	2,598.6	36.1	-0.8	36.0	0.39	0.34	-4.65
2,700.0	2.28	135.46	2,698.5	33.1	2.1	32.9	0.23	-0.23	1.10
2,800.0	1.73	134.10	2,798.5	30.6	4.6	30.3	0.55	-0.55	-1.36
2,900.0	1.51	140.80	2,898.4	28.6	6.5	28.2	0.29	-0.22	6.70
3,000.0	1.17	151.45	2,998.4	26.6	7.9	26.2	0.42	-0.34	10.65
3,100.0	1.32	140.45	3,098.4	24.9	9.1	24.3	0.28	0.15	-11.00
3,200.0	0.87	135.81	3,198.3	23.4	10.3	22.8	0.46	-0.45	-4.64
3,300.0	1.11	154.74	3,298.3	22.0	11.3	21.4	0.40	0.24	18.93
3,400.0	0.86	116.63	3,398.3	20.8	12.4	20.1	0.69	-0.25	-38.11
3,500.0	0.50	93.16	3,498.3	20.4	13.5	19.7	0.45	-0.36	-23.47
3,600.0	0.41	108.93	3,598.3	20.3	14.3	19.5	0.15	-0.09	15.77
3,700.0	0.77	111.93	3,698.3	19.9	15.2	19.1	0.36	0.36	3.00
3,800.0	0.75	71.78	3,798.3	19.9	16.5	19.0	0.52	-0.02	-40.15
3,900.0	0.31	112.86	3,898.3	20.0	17.3	19.0	0.56	-0.44	41.08
4,000.0	0.32	128.91	3,998.3	19.7	17.8	18.7	0.09	0.01	16.05
4,100.0	0.26	130.75	4,098.3	19.4	18.2	18.4	0.06	-0.06	1.84
4,200.0	0.13	308.17	4,198.3	19.3	18.3	18.3	0.39	-0.13	177.42
4,300.0	0.43	194.98	4,298.3	19.0	18.1	18.0	0.50	0.30	-113.19
4,400.0	0.19	284.11	4,398.3	18.7	17.8	17.7	0.47	-0.24	89.13
4,500.0	0.38	104.16	4,498.3	18.6	18.0	17.6	0.57	0.19	-179.95
4,600.0	0.19	219.63	4,598.3	18.4	18.2	17.4	0.49	-0.19	115.47
4,700.0	0.36	210.33	4,698.3	18.0	17.9	17.0	0.18	0.17	-9.30
4,800.0	0.14	62.64	4,798.3	17.8	17.9	16.8	0.48	-0.22	-147.69
4,900.0	0.43	289.63	4,898.3	18.0	17.6	17.0	0.54	0.29	-133.01
5,000.0	0.22	314.54	4,998.3	18.3	17.2	17.3	0.25	-0.21	24.91
5,100.0	0.58	356.06	5,098.3	18.9	17.0	17.9	0.44	0.36	41.52
5,200.0	0.41	286.45	5,198.3	19.5	16.6	18.6	0.58	-0.17	-69.61



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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	0.20	254.18	5,298.3	19.6	16.1	18.7	0.26	-0.21	-32.27
5,400.0	1.06	295.85	5,398.3	19.9	15.1	19.1	0.92	0.86	41.67
5,500.0	0.92	268.41	5,498.3	20.3	13.5	19.5	0.49	-0.14	-27.44
5,600.0	0.79	256.74	5,598.2	20.1	12.0	19.4	0.22	-0.13	-11.67
5,700.0	0.77	268.90	5,698.2	20.0	10.6	19.3	0.17	-0.02	12.16
5,800.0	0.98	259.45	5,798.2	19.8	9.1	19.3	0.25	0.21	-9.45
5,900.0	0.74	244.05	5,898.2	19.3	7.7	18.9	0.33	-0.24	-15.40
6,000.0	0.48	254.34	5,998.2	18.9	6.7	18.6	0.28	-0.26	10.29
6,100.0	0.84	264.44	6,098.2	18.8	5.6	18.4	0.38	0.36	10.10
6,200.0	0.84	260.00	6,198.2	18.6	4.1	18.3	0.07	0.00	-4.44
6,300.0	1.32	298.17	6,298.2	19.0	2.4	18.8	0.84	0.48	38.17
6,400.0	2.42	291.48	6,398.1	20.3	-0.6	20.3	1.12	1.10	-6.69
6,500.0	2.92	286.14	6,498.0	21.8	-5.0	22.0	0.56	0.50	-5.34
6,600.0	2.53	287.75	6,597.9	23.2	-9.5	23.6	0.40	-0.39	1.61
6,700.0	2.74	316.05	6,697.8	25.6	-13.3	26.2	1.30	0.21	28.30
6,800.0	4.31	302.49	6,797.6	29.3	-18.1	30.2	1.77	1.57	-13.56
6,900.0	4.80	295.34	6,897.3	33.1	-25.1	34.4	0.75	0.49	-7.15
7,000.0	2.06	302.90	6,997.1	35.9	-30.4	37.5	2.77	-2.74	7.56
7,100.0	0.70	267.65	7,097.1	36.8	-32.5	38.5	1.54	-1.36	-35.25
7,200.0	1.85	170.19	7,197.0	35.2	-32.8	36.9	2.06	1.15	-97.46
7,300.0	1.81	154.96	7,297.0	32.2	-31.9	33.9	0.49	-0.04	-15.23
7,400.0	0.93	161.06	7,397.0	30.0	-31.0	31.6	0.89	-0.88	6.10
7,500.0	1.02	137.12	7,497.0	28.6	-30.1	30.2	0.41	0.09	-23.94
7,600.0	0.73	352.10	7,596.9	28.5	-29.6	30.1	1.67	-0.29	-145.02
7,700.0	1.25	3.91	7,696.9	30.3	-29.6	31.8	0.56	0.52	11.81
7,800.0	1.62	306.41	7,796.9	32.2	-30.6	33.8	1.42	0.37	-57.50
7,900.0	1.59	314.00	7,896.9	34.0	-32.8	35.7	0.21	-0.03	7.59
8,000.0	0.87	244.55	7,996.8	34.6	-34.5	36.5	1.52	-0.72	-69.45
8,100.0	1.13	161.22	8,096.8	33.4	-34.8	35.2	1.34	0.26	-83.33
8,200.0	0.34	125.14	8,196.8	32.3	-34.3	34.1	0.88	-0.79	-36.08
8,300.0	0.91	224.76	8,296.8	31.5	-34.6	33.4	1.02	0.57	99.62
8,400.0	0.52	207.87	8,396.8	30.6	-35.4	32.5	0.44	-0.39	-16.89
8,500.0	0.62	110.29	8,496.8	30.0	-35.1	31.8	0.86	0.10	-97.58
8,600.0	2.41	81.14	8,596.8	30.1	-32.5	31.8	1.89	1.79	-29.15
8,700.0	2.71	98.69	8,696.7	30.1	-28.1	31.6	0.84	0.30	17.55
8,800.0	3.30	122.17	8,796.5	28.2	-23.3	29.4	1.35	0.59	23.48
8,900.0	2.58	130.99	8,896.4	25.2	-19.2	26.2	0.85	-0.72	8.82
9,000.0	1.49	151.65	8,996.3	22.6	-16.8	23.4	1.30	-1.09	20.66
9,100.0	1.48	210.39	9,096.3	20.3	-16.9	21.2	1.46	-0.01	58.74
9,200.0	1.36	208.16	9,196.3	18.1	-18.1	19.1	0.13	-0.12	-2.23
9,300.0	1.34	201.92	9,296.3	16.0	-19.1	17.0	0.15	-0.02	-6.24
9,400.0	1.25	205.22	9,396.2	13.9	-20.0	15.0	0.12	-0.09	3.30
9,500.0	1.14	196.67	9,496.2	12.0	-20.7	13.1	0.21	-0.11	-8.55

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Gyro Tie-In @ 9594' MD / 9590' TVD									
9,594.0	1.25	194.67	9,590.2	10.1	-21.3	11.3	0.13	0.12	-2.13
9,760.0	2.50	194.80	9,756.1	4.9	-22.6	6.1	0.75	0.75	0.08
9,792.0	2.10	194.50	9,788.1	3.6	-23.0	4.9	1.25	-1.25	-0.94
9,823.0	2.20	230.90	9,819.1	2.7	-23.6	4.0	4.34	0.32	117.42
9,854.0	4.80	275.20	9,850.0	2.4	-25.3	3.8	11.52	8.39	142.90
9,886.0	7.90	286.10	9,881.8	3.2	-28.8	4.7	10.35	9.69	34.06
9,917.0	10.60	291.50	9,912.4	4.8	-33.5	6.6	9.14	8.71	17.42
9,948.0	13.70	296.80	9,942.7	7.5	-39.4	9.6	10.62	10.00	17.10
9,980.0	15.80	300.80	9,973.6	11.4	-46.5	14.0	7.29	6.56	12.50
10,011.0	17.40	298.50	10,003.4	15.8	-54.2	18.8	5.58	5.16	-7.42
10,042.0	19.90	303.30	10,032.7	20.9	-62.7	24.3	9.46	8.06	15.48
10,073.0	21.60	307.20	10,061.7	27.3	-71.7	31.1	7.06	5.48	12.58
10,105.0	23.60	309.30	10,091.3	34.9	-81.3	39.3	6.74	6.25	6.56
10,136.0	25.60	313.10	10,119.4	43.4	-91.0	48.3	8.22	6.45	12.26
10,167.0	28.60	315.40	10,147.0	53.3	-101.1	58.7	10.25	9.68	7.42
10,199.0	31.40	317.70	10,174.7	64.9	-112.1	70.9	9.46	8.75	7.19
10,230.0	33.80	320.00	10,200.9	77.5	-123.1	84.1	8.71	7.74	7.42
10,261.0	36.40	318.60	10,226.2	91.0	-134.7	98.2	8.78	8.39	-4.52
10,292.0	39.10	318.20	10,250.7	105.2	-147.3	113.0	8.75	8.71	-1.29
10,324.0	41.00	317.40	10,275.2	120.4	-161.2	129.0	6.15	5.94	-2.50
10,355.0	44.20	316.60	10,298.0	135.8	-175.5	145.1	10.47	10.32	-2.58
10,386.0	46.00	317.00	10,319.9	151.8	-190.5	161.9	5.88	5.81	1.29
10,416.0	49.50	313.30	10,340.1	167.5	-206.2	178.5	14.81	11.67	-12.33
10,447.0	52.80	312.80	10,359.5	184.0	-223.8	195.9	10.72	10.65	-1.61
10,478.0	57.30	312.30	10,377.3	201.1	-242.5	214.1	14.58	14.52	-1.61
Crossed Lease Line @ 10507' MD / 10392' TVD									
10,506.6	62.65	313.41	10,391.6	218.0	-260.7	231.9	19.01	18.71	3.89
10,509.0	63.10	313.50	10,392.7	219.4	-262.2	233.4	19.01	18.73	3.67
10,541.0	68.80	314.00	10,405.7	239.6	-283.3	254.8	17.87	17.81	1.56
10,573.0	72.60	316.60	10,416.3	261.1	-304.5	277.4	14.13	11.88	8.13
10,604.0	77.00	321.90	10,424.4	283.8	-324.0	301.0	21.76	14.19	17.10
10,636.0	79.10	327.00	10,431.1	309.2	-342.2	327.5	16.92	6.56	15.94
10,667.0	80.10	333.70	10,436.7	335.7	-357.3	354.7	21.50	3.23	21.61
10,699.0	81.20	340.00	10,441.9	364.7	-369.7	384.4	19.73	3.44	19.69
10,730.0	84.50	344.10	10,445.7	394.0	-379.2	414.1	16.90	10.65	13.23
10,761.0	86.50	349.70	10,448.2	424.1	-386.2	444.5	19.13	6.45	18.06
10,795.0	89.90	356.70	10,449.2	457.8	-390.2	478.4	22.88	10.00	20.59
10,857.0	90.50	0.20	10,449.0	519.8	-391.9	540.4	5.73	0.97	5.65
Crossed Hard Line @ 10884' MD / 10449' TVD									
10,884.3	90.79	0.87	10,448.7	547.1	-391.6	567.6	2.67	1.06	2.45
10,951.0	91.50	2.50	10,447.4	613.7	-389.7	634.1	2.67	1.06	2.45
11,045.0	87.40	3.90	10,448.3	707.5	-384.4	727.5	4.61	-4.36	1.49
11,138.0	86.70	4.30	10,453.1	800.2	-377.8	819.6	0.87	-0.75	0.43

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QES

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Site: Sec 28, T23S, R28E
Well: Loving Townsite 21 W2PA FEE #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Loving Townsite 21 W2PA FEE #1H
TVD Reference: WELL @ 3062.0usft (Patterson #243)
MD Reference: WELL @ 3062.0usft (Patterson #243)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM5002

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)
11,232.0	86.80	5.00	10,458.4	893.7	-370.2	912.6	0.75	0.11	0.74
11,326.0	86.80	5.00	10,463.6	987.2	-362.0	1,005.5	0.00	0.00	0.00
11,420.0	87.10	5.70	10,468.6	1,080.7	-353.2	1,098.3	0.81	0.32	0.74
11,514.0	89.30	5.90	10,471.6	1,174.1	-343.7	1,191.2	2.35	2.34	0.21
11,608.0	90.50	4.80	10,471.8	1,267.7	-335.0	1,284.1	1.73	1.28	-1.17
11,702.0	87.80	2.20	10,473.2	1,361.5	-329.2	1,377.5	3.99	-2.87	-2.77
11,796.0	90.00	2.20	10,475.0	1,455.4	-325.6	1,471.0	2.34	2.34	0.00
11,890.0	89.80	2.00	10,475.1	1,549.4	-322.2	1,564.6	0.30	-0.21	-0.21
11,984.0	86.60	3.40	10,478.1	1,643.2	-317.8	1,658.1	3.72	-3.40	1.49
12,078.0	87.90	4.10	10,482.6	1,736.9	-311.6	1,751.3	1.57	1.38	0.74
12,171.0	86.90	3.60	10,486.8	1,829.6	-305.4	1,843.5	1.20	-1.08	-0.54
12,265.0	90.70	3.40	10,488.8	1,923.4	-299.6	1,936.9	4.05	4.04	-0.21
12,359.0	88.10	2.50	10,489.8	2,017.2	-294.8	2,030.3	2.93	-2.77	-0.96
12,451.0	90.30	2.00	10,491.0	2,109.1	-291.2	2,121.9	2.45	2.39	-0.54
12,545.0	89.10	0.40	10,491.5	2,203.1	-289.2	2,215.6	2.13	-1.28	-1.70
12,638.0	90.10	0.20	10,492.2	2,296.1	-288.7	2,308.5	1.10	1.08	-0.22
12,732.0	89.30	0.60	10,492.7	2,390.1	-288.1	2,402.3	0.95	-0.85	0.43
12,827.0	90.40	359.00	10,492.9	2,485.1	-288.4	2,497.1	2.04	1.16	-1.68
12,920.0	91.30	359.50	10,491.5	2,578.1	-289.6	2,590.1	1.11	0.97	0.54
13,014.0	89.90	358.10	10,490.6	2,672.1	-291.6	2,684.0	2.11	-1.49	-1.49
13,108.0	93.30	358.00	10,487.9	2,765.9	-294.8	2,777.9	3.62	3.62	-0.11
13,202.0	88.40	357.10	10,486.5	2,859.8	-298.8	2,871.9	5.30	-5.21	-0.96
13,296.0	87.70	357.40	10,489.7	2,953.7	-303.3	2,965.8	0.81	-0.74	0.32
13,390.0	92.30	357.60	10,489.7	3,047.5	-307.4	3,059.8	4.90	4.89	0.21
13,484.0	94.10	358.30	10,484.5	3,141.3	-310.8	3,153.6	2.05	1.91	0.74
13,578.0	92.40	359.50	10,479.2	3,235.2	-312.6	3,247.4	2.21	-1.81	1.28
13,672.0	90.90	0.10	10,476.5	3,329.1	-312.9	3,341.2	1.72	-1.60	0.64
13,766.0	86.20	358.80	10,478.8	3,423.1	-313.8	3,435.1	5.19	-5.00	-1.38
13,859.0	86.50	359.40	10,484.8	3,515.9	-315.3	3,527.8	0.72	0.32	0.65
13,953.0	87.10	0.10	10,490.0	3,609.7	-315.7	3,621.6	0.98	0.64	0.74
14,047.0	86.10	359.90	10,495.6	3,703.5	-315.7	3,715.2	1.08	-1.06	-0.21
14,141.0	86.80	1.50	10,501.4	3,797.3	-314.5	3,808.9	1.85	0.74	1.70
14,235.0	92.20	3.10	10,502.2	3,891.2	-310.8	3,902.4	5.99	5.74	1.70
14,329.0	90.80	2.90	10,499.8	3,985.1	-305.8	3,995.8	1.50	-1.49	-0.21
14,422.0	87.90	359.40	10,500.8	4,078.0	-304.0	4,088.5	4.89	-3.12	-3.76
14,516.0	95.60	3.10	10,497.9	4,171.9	-301.9	4,182.1	9.09	8.19	3.94
14,611.0	96.10	3.10	10,488.3	4,266.2	-296.8	4,276.1	0.53	0.53	0.00
14,704.0	93.90	3.80	10,480.2	4,358.7	-291.2	4,368.1	2.48	-2.37	0.75
14,798.0	89.00	3.20	10,477.8	4,452.5	-285.5	4,461.4	5.25	-5.21	-0.64
14,892.0	89.90	2.00	10,478.7	4,546.4	-281.3	4,554.9	1.60	0.96	-1.28
14,985.0	86.20	4.60	10,481.8	4,639.1	-275.9	4,647.3	4.86	-3.98	2.80
15,079.0	86.40	4.50	10,487.9	4,732.6	-268.5	4,740.2	0.24	0.21	-0.11
15,173.0	85.20	3.90	10,494.8	4,826.1	-261.6	4,833.2	1.43	-1.28	-0.64

Survey Report



Company: Mewbourne Oil Company
Project: Eddy County, New Mexico
Site: Sec 28, T23S, R28E
Well: Loving Townsite 21 W2PA FEE #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Loving Townsite 21 W2PA FEE #1H
TVD Reference: WELL @ 3062.0usft (Patterson #243)
MD Reference: WELL @ 3062.0usft (Patterson #243)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM5002

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)
15,267.0	86.70	2.30	10,501.4	4,919.8	-256.5	4,926.4	2.33	1.60	-1.70
15,360.0	92.00	2.20	10,502.5	5,012.6	-252.9	5,019.0	5.70	5.70	-0.11
15,454.0	91.10	3.40	10,499.9	5,106.5	-248.3	5,112.4	1.60	-0.96	1.28
15,500.0	91.40	1.60	10,498.9	5,152.4	-246.3	5,158.2	3.97	0.65	-3.91
TD @ 15550' MD / 10498' TVD									
15,550.0	91.40	1.60	10,497.7	5,202.4	-244.9	5,208.0	0.00	0.00	0.00

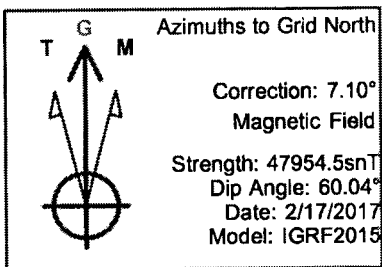
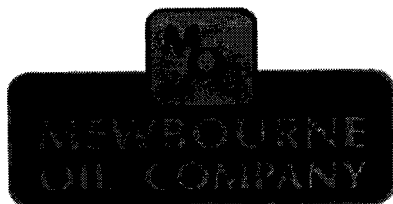
Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,594.0	9,590.2	10.1	-21.3	Gyro Tie-In @ 9594' MD / 9590' TVD
10,506.6	10,391.6	218.0	-260.7	Crossed Lease Line @ 10507' MD / 10392' TVD
10,884.3	10,448.7	547.1	-391.6	Crossed Hard Line @ 10884' MD / 10449' TVD
15,550.0	10,497.7	5,202.4	-244.9	TD @ 15550' MD / 10498' TVD

Checked By: _____ Approved By: _____ Date: _____

Company Name: Newbourn Oil Company
 Loving Townsite 21 W2PA FEE #1H
 Eddy County, New Mexico
 Rig: Patterson #243
 Created By: Shane Robbins
 Date: 3/28/2017

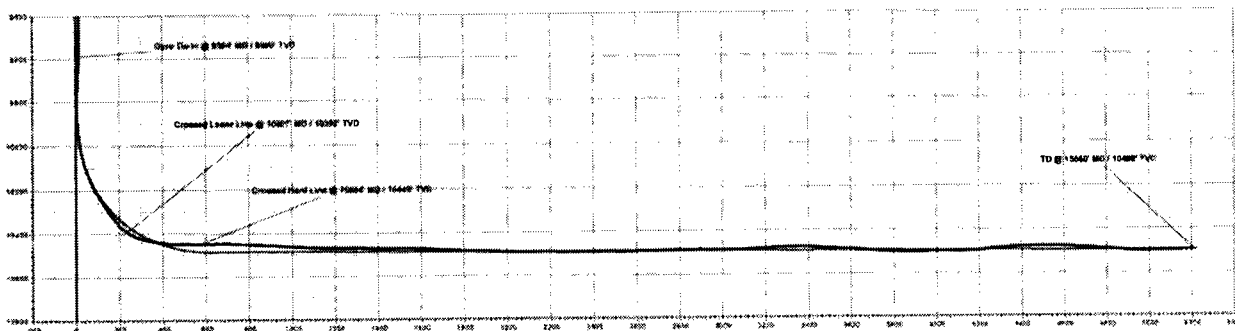
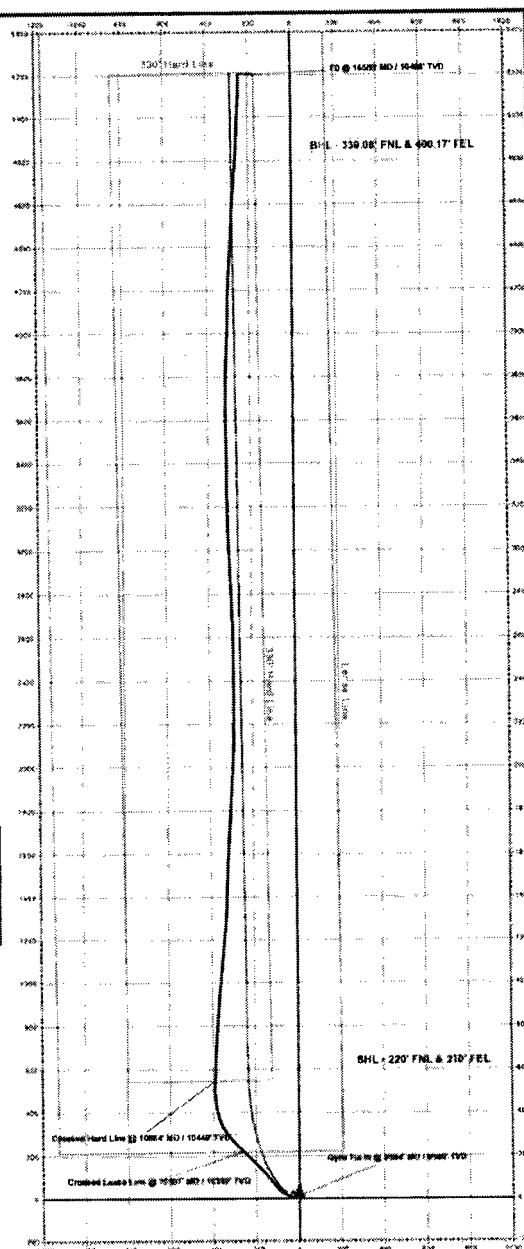
Loving Townsite 21 W2PA FEE #1H
 Eddy County, New Mexico
 Q170265 & WT-170216
 Design #2 (tie-in)



WELL DETAILS: Loving Townsite 21 W2PA FEE #1H					
		Observed Elev	3036.0		
+N/-S	+E/-W	Nothing	Nothing	Latitude	Longitude
0.0	0.0	480637.80	577090.66	32° 18' 57.563 N	104° 5' 3.033 W

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 3051
System Datum:	Mean Sea Level

ANNOTATIONS									
MD	Inc	Adj	TVD	+N/-S	+E/-W	V Sect	Departure	Annotation	
0594.0	1.25	194.97	9590.2	10.1	-21.3	11.3	221.3	Open Tie-In @ 5594' MD / 9590' TVD	
10505.8	02.95	313.41	10391.8	219.0	-290.7	231.9	552.0	Crossed Lease Line @ 10507' MD / 10182' TVD	
10884.3	00.79	0.87	10448.7	547.1	-351.0	567.6	922.8	Crossed Hard Line @ 10884' MD / 10448' TVD	
15550.0	01.40	1.80	10487.7	5202.4	-244.9	5208.0	5584.0	TD @ 15550' MD / 10488' TVD	



Vertical Section at 356.87° (200 usf/in)