

OPERATOR
WELL/LEASE
COUNTY

MEWBOURNE OIL COMPANY
Leo 15 DA Fed Com 1H
EDDY

045-0106

STATE OF NEW MEXICO
DEVIATION REPORT

30-015-42185

370	1.00
735	1.42
1,138	0.73
1,516	0.62
1,770	0.21
2,120	0.37
2,560	0.56
3,008	0.31
3,484	0.56
3,961	0.57
4,437	0.77
4,882	1.41
5,327	1.09
5,741	0.00
6,214	0.84
6,667	1.37
7,109	0.68

STATE OF TEXAS

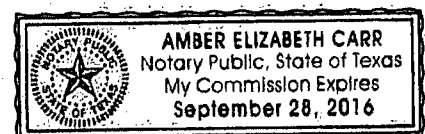
COUNTY OF MIDLAND

BY

The foregoing instrument was acknowledged before me on
Daisy Carrillo on behalf of Patterson-UTI Drilling Company LLC.

8/13/14, by

Amber Elizabeth Carr
Notary Public for Midland County, Texas
My Commission Expires:



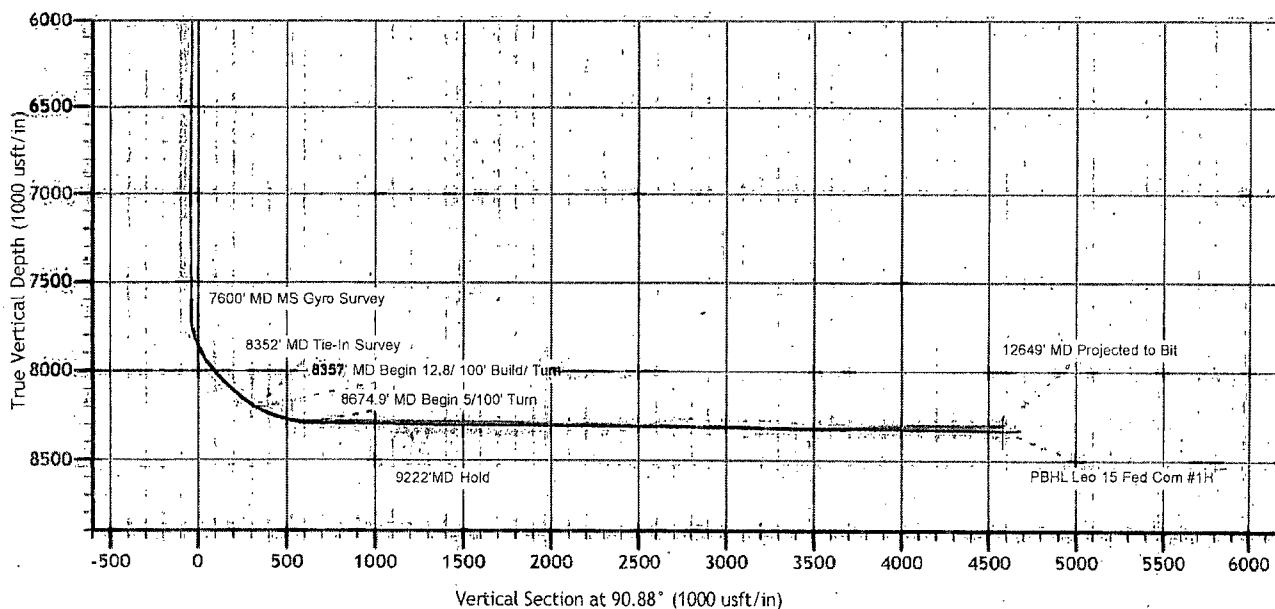
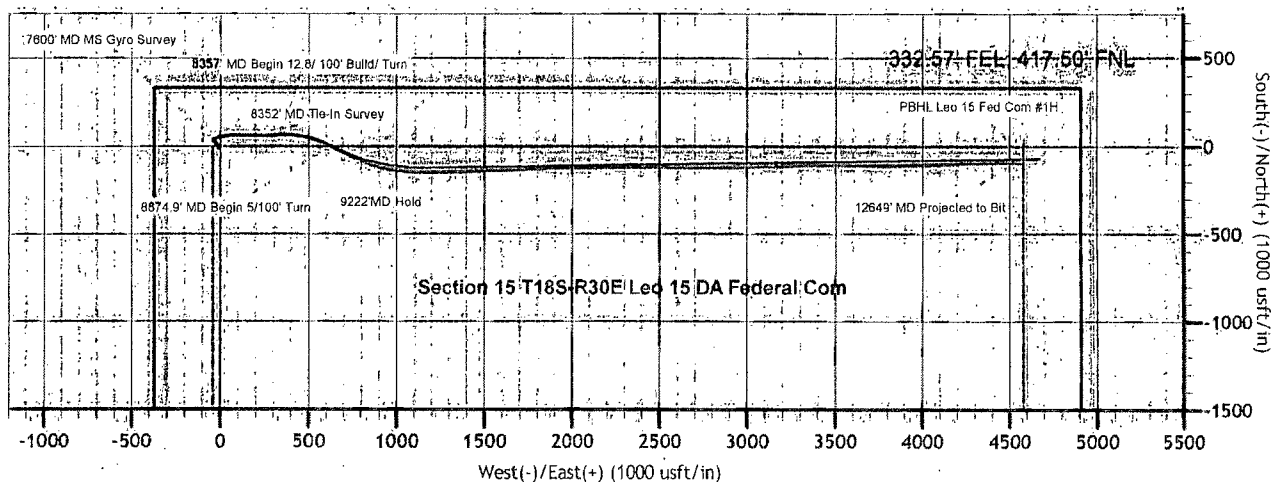
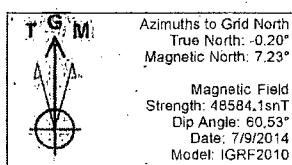


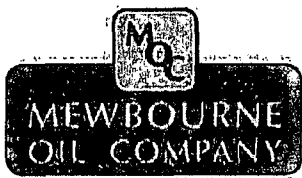
COMPANY: Mewbourne Oil Company
 WELL: Leo 15 DA Federal Com
 COUNTY: Eddy County, New Mexico
 DATUM: NAD 1927 (NADCON CONUS)
 RIG: Patterson #45
 GRID CORRECTION: To convert a Magnetic Direction to a Grid Direction, Add 7.23°

OFFICE: 936.582.7296

GEODETIC ZONE: New Mexico-East 3001 GL 3515+20 @ 3535.0usft (Patterson #45) GROUND ELEVATION: 3515.0							
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot	
0.0	0.0	638089.05	612725.81	32° 45' 13.190 N	103° 57' 59.997 W		

PLAN SECTIONS										
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Target
1	8352.0	61.40	85.60	8206.3	63.1	332.7	0.00	0.00	331.7	
2	8357.0	61.40	85.60	8208.7	63.5	337.1	0.00	0.00	336.0	
3	8874.9	89.40	116.52	8289.9	0.5	630.9	12.80	52.00	830.8	
4	9222.0	89.42	89.16	8295.7	-119.9	1159.2	5.00	-90.09	1160.9	
5	12643.5	89.42	89.16	8330.0	-70.0	4590.2	0.00	0.00	4580.7	PBHL Leo 15 Fed Com #1H





Mewbourne Oil Company .

Eddy County, New Mexico

Section 15 T18S-R30E Leo 15 DA Federal Com

Leo 15 DA Federal Com

Original Hole

Design: Original Hole

Standard Survey Report

23 July, 2014





Stryker Directional Survey Report



Company:	Mewbourne Oil Company	Local Co-ordinate Reference:	Well: Leo 15 DA Federal Com
Project:	Eddy County, New Mexico	TVD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Site:	Section 15 T18S-R30E Leo 15 DA Federal Com	MD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Well:	Leo 15 DA Federal Com	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker EDM

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:	Section 15 T18S-R30E Leo 15 DA Federal Com		
Site Position:	Map	Northings:	638,089.06 usft
From:		Easting:	612,725.81 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 45' 13.190 N
		Longitude:	103° 57' 59.997 W
		Grid Convergence:	0.20 °

Well:	Leo 15 DA Federal Com		
Well Position	+N/-S	0.0 usft	Northings:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 45' 13.190 N
		Longitude:	103° 57' 59.997 W
		Ground Level:	3,515.0 usft

Wellbore:	Original Hole		
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Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	7/9/2014	(°)	(°)	(nT)
			7.43	60.53	48,584

Design:	Original Hole		
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Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0

Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	90.00

Survey Program	Date: 7/23/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	7,600.0	MS Gyro Survey (Original Hole)	SRG-GYRO-MS
7,684.0	12,649.0	Stryker MWD Survey (Original Hole)	MWD
			Description
			surface readout gyro multishot
			MWD v3: standard declination

Survey	Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
	(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)
	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	100.0	0.37	134.87	100.0	-0.2	0.2	0.2	0.37	0.37	0.00
	200.0	0.82	201.44	200.0	-1.1	0.2	0.2	0.75	0.45	66.57
	300.0	1.02	214.33	300.0	-2.5	-0.6	-0.6	0.29	0.20	12.89
	400.0	1.08	202.37	400.0	-4.1	-1.4	-1.4	0.23	0.06	-11.96
	500.0	1.32	216.04	499.9	-5.9	-2.5	-2.5	0.37	0.24	13.67
	600.0	1.16	235.44	599.9	-7.4	-4.0	-4.0	0.45	-0.16	19.40
	700.0	1.33	234.87	699.9	-8.7	-5.8	-5.8	0.17	0.17	-0.57
	800.0	1.00	244.89	799.9	-9.7	-7.5	-7.5	0.39	-0.33	10.02
	900.0	0.72	225.05	899.9	-10.5	-8.7	-8.7	0.40	-0.28	-19.84



Stryker Directional Survey Report



Company:	Mewbourne Oil Company	Local Co-ordinate Reference:	Well: Leo 15 DA Federal Com
Project:	Eddy County, New Mexico	TVD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Site:	Section 15T18S-R30E Leo 15 DA Federal Com	MD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Well:	Leo 15 DA Federal Com	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker EDM

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	0.55	250.00	999.9	-11.1	-9.6	-9.6	0.32	-0.17	24.95
1,100.0	0.18	235.07	1,099.9	-11.4	-10.2	-10.2	0.38	-0.37	-14.93
1,200.0	0.17	330.48	1,199.9	-11.4	-10.4	-10.4	0.26	-0.01	95.41
1,300.0	0.50	66.40	1,299.9	-11.1	-10.1	-10.1	0.54	0.33	95.92
1,400.0	0.80	68.72	1,399.8	-10.6	-9.0	-9.0	0.30	0.30	2.32
1,500.0	0.44	30.66	1,499.8	-10.0	-8.2	-8.2	0.53	-0.36	-38.06
1,600.0	0.18	65.65	1,599.8	-9.6	-7.8	-7.8	0.31	-0.26	34.99
1,700.0	0.09	333.20	1,699.8	-9.5	-7.7	-7.7	0.20	-0.09	-92.45
1,800.0	0.32	39.86	1,799.8	-9.2	-7.6	-7.6	0.30	0.23	66.66
1,900.0	0.26	349.60	1,899.8	-8.8	-7.5	-7.5	0.25	-0.06	-50.26
2,000.0	0.09	105.50	1,999.8	-8.6	-7.4	-7.4	0.31	-0.17	115.90
2,100.0	0.30	335.08	2,099.8	-8.4	-7.5	-7.5	0.36	0.21	-130.42
2,200.0	0.14	29.88	2,199.8	-8.0	-7.5	-7.5	0.25	-0.16	54.80
2,300.0	0.26	287.52	2,299.8	-7.9	-7.7	-7.7	0.32	0.12	-102.36
2,400.0	0.38	313.20	2,399.8	-7.6	-8.1	-8.1	0.18	0.12	25.68
2,500.0	0.11	332.69	2,499.8	-7.2	-8.4	-8.4	0.28	-0.27	19.49
2,600.0	0.42	283.06	2,599.8	-7.1	-8.8	-8.8	0.36	0.31	-49.63
2,700.0	0.14	284.24	2,699.8	-7.0	-9.3	-9.3	0.28	-0.28	1.18
2,800.0	0.42	287.15	2,799.8	-6.8	-9.8	-9.8	0.28	0.28	2.91
2,900.0	0.43	304.49	2,899.8	-6.5	-10.4	-10.4	0.13	0.01	17.34
3,000.0	0.14	344.59	2,999.8	-6.2	-10.8	-10.8	0.34	-0.29	40.10
3,100.0	0.29	297.92	3,099.8	-5.9	-11.0	-11.0	0.22	0.15	-46.67
3,200.0	0.13	20.70	3,199.8	-5.7	-11.2	-11.2	0.30	-0.16	82.78
3,300.0	0.25	299.46	3,299.8	-5.5	-11.3	-11.3	0.26	0.12	-81.24
3,400.0	0.12	306.51	3,399.8	-5.3	-11.6	-11.6	0.13	-0.13	7.05
3,500.0	0.34	305.47	3,499.8	-5.1	-11.9	-11.9	0.22	0.22	-1.04
3,600.0	0.34	1.09	3,599.8	-4.6	-12.2	-12.2	0.32	0.00	55.62
3,700.0	0.38	325.38	3,699.8	-4.1	-12.4	-12.4	0.22	0.04	-35.71
3,800.0	0.39	328.93	3,799.8	-3.5	-12.7	-12.7	0.03	0.01	3.55
3,900.0	0.66	348.92	3,899.8	-2.6	-13.0	-13.0	0.32	0.27	19.99
4,000.0	0.49	349.14	3,999.8	-1.7	-13.2	-13.2	0.17	-0.17	0.22
4,100.0	0.92	334.99	4,099.8	-0.5	-13.6	-13.6	0.46	0.43	-14.15
4,200.0	1.03	349.61	4,199.8	1.1	-14.1	-14.1	0.27	0.11	14.62
4,300.0	0.99	340.24	4,299.8	2.8	-14.6	-14.6	0.17	-0.04	-9.37
4,400.0	1.18	340.68	4,399.8	4.6	-15.2	-15.2	0.19	0.19	0.44
4,500.0	0.98	348.89	4,499.7	6.4	-15.7	-15.7	0.25	-0.20	8.21
4,600.0	1.25	338.28	4,599.7	8.3	-16.3	-16.3	0.34	0.27	-10.61
4,700.0	1.14	290.38	4,699.7	9.6	-17.6	-17.6	0.98	-0.11	-47.90
4,800.0	1.07	289.43	4,799.7	10.3	-19.4	-19.4	0.07	-0.07	-0.95
4,900.0	1.22	308.27	4,899.7	11.2	-21.2	-21.2	0.40	0.15	18.84
5,000.0	1.21	338.35	4,999.6	12.9	-22.4	-22.4	0.63	-0.01	30.08
5,100.0	1.10	354.96	5,099.6	14.8	-22.9	-22.9	0.35	-0.11	16.61
5,200.0	1.19	344.08	5,199.6	16.8	-23.2	-23.2	0.23	0.09	-10.88



Stryker Directional Survey Report



Company:	Mawbourne Oil Company	Local Co-ordinate Reference:	Well Leo 15 DA Federal Com
Project:	Eddy County, New Mexico	TVD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Site:	Section 15T18S-R30E Leo 15 DA Federal Com	MD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Well:	Leo 15 DA Federal Com	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker EDM

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	1.02	345.56	5,299.6	18.6	-23.7	-23.7	0.17	-0.17	1.48	
5,400.0	0.85	317.46	5,399.6	20.0	-24.4	-24.4	0.48	-0.17	-28.10	
5,500.0	1.24	319.59	5,499.5	21.4	-25.7	-25.7	0.39	0.39	2.13	
5,600.0	1.07	311.67	5,599.5	22.9	-27.1	-27.1	0.23	-0.17	-7.92	
5,700.0	0.99	286.92	5,699.5	23.7	-28.6	-28.6	0.45	-0.08	-24.75	
5,800.0	1.06	294.86	5,799.5	24.4	-30.2	-30.2	0.16	0.07	7.94	
5,900.0	0.92	290.33	5,899.5	25.0	-31.8	-31.8	0.16	-0.14	-4.53	
6,000.0	0.90	309.53	5,999.5	25.8	-33.2	-33.2	0.30	-0.02	19.20	
6,100.0	0.82	339.98	6,099.5	27.0	-34.0	-34.0	0.46	-0.08	30.45	
6,200.0	0.75	341.53	6,199.5	28.3	-34.5	-34.5	0.07	-0.07	1.55	
6,300.0	0.81	339.24	6,299.4	29.6	-35.0	-35.0	0.07	0.06	-2.29	
6,400.0	0.87	330.65	6,399.4	30.9	-35.6	-35.6	0.14	0.06	-8.59	
6,500.0	0.92	329.31	6,499.4	32.2	-36.4	-36.4	0.05	0.05	-1.34	
6,600.0	1.06	300.76	6,599.4	33.4	-37.6	-37.6	0.51	0.14	-28.55	
6,700.0	0.97	301.98	6,699.4	34.3	-39.1	-39.1	0.09	-0.09	1.22	
6,800.0	0.30	290.00	6,799.4	34.9	-40.0	-40.0	0.68	-0.67	-11.98	
6,900.0	0.15	197.80	6,899.4	34.8	-40.3	-40.3	0.34	-0.15	-92.20	
7,000.0	0.28	127.60	6,999.4	34.6	-40.2	-40.2	0.27	0.13	-70.20	
7,100.0	0.51	82.78	7,099.4	34.5	-39.5	-39.5	0.37	0.23	-44.82	
7,200.0	0.53	76.25	7,199.4	34.6	-38.6	-38.6	0.06	0.02	-6.53	
7,300.0	0.73	71.15	7,299.4	34.9	-37.6	-37.6	0.21	0.20	-5.10	
7,400.0	0.60	54.29	7,399.4	35.5	-36.6	-36.6	0.23	-0.13	-16.86	
7,500.0	0.77	11.28	7,499.4	36.4	-36.0	-36.0	0.53	0.17	-43.01	
7,600.0	1.01	8.40	7,599.3	37.9	-35.7	-35.7	0.24	0.24	-2.88	
7600 MD MS Gyro Survey										
7,684.0	0.30	47.10	7,683.3	38.8	-35.5	-35.5	0.95	-0.85	46.07	
7,716.0	3.60	71.30	7,715.3	39.2	-34.5	-34.5	10.40	10.31	75.63	
7,748.0	9.70	70.10	7,747.1	40.4	-31.0	-31.0	19.07	19.06	-3.75	
7,780.0	15.60	69.60	7,778.3	42.9	-24.4	-24.4	18.44	18.44	-1.56	
7,811.0	18.50	71.20	7,807.9	45.9	-15.8	-15.8	9.48	9.35	5.16	
7,843.0	21.30	74.10	7,838.0	49.1	-5.4	-5.4	9.28	8.75	9.06	
7,875.0	24.80	75.70	7,867.5	52.4	6.7	6.7	11.11	10.94	5.00	
7,907.0	28.40	78.00	7,896.1	55.6	20.6	20.6	11.70	11.25	7.19	
7,938.0	32.40	80.70	7,922.8	58.5	36.0	36.0	13.63	12.90	8.71	
7,970.0	35.80	84.00	7,949.3	60.9	53.8	53.8	12.09	10.63	10.31	
8,002.0	38.30	88.20	7,974.8	62.2	73.0	73.0	11.11	7.81	13.13	
8,034.0	39.90	91.00	7,999.7	62.3	93.2	93.2	7.45	5.00	8.75	
8,065.0	41.60	91.40	8,023.2	61.9	113.4	113.4	5.55	5.48	1.29	
8,097.0	43.30	91.20	8,046.8	61.4	135.0	135.0	5.33	5.31	-0.63	
8,129.0	45.50	90.80	8,069.6	61.0	157.4	157.4	6.93	6.88	-1.25	
8,161.0	47.50	91.50	8,091.7	60.5	180.6	180.6	6.45	6.25	2.19	
8,193.0	49.20	92.30	8,112.9	59.7	204.5	204.5	5.63	5.31	2.50	
8,224.0	50.70	91.00	8,132.9	59.0	228.2	228.2	5.81	4.84	-4.19	



Stryker Directional Survey Report



Company:	Mawbourn Oil Company	Local Co-ordinate Reference:	Well Leo 15 DA Federal Com
Project:	Eddy County, New Mexico	TVD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Site:	Section 15-T18S-R30E Leo 15 DA Federal Com	MD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Well:	Leo 15 DA Federal Com	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker EDM

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)
8,256.0	52.20	89.60	8,152.8	58.9	253.3	253.3	5.80	4.69	-4.38
8,288.0	54.00	87.50	8,172.0	59.6	278.8	278.8	7.69	5.63	-6.56
8,320.0	57.40	85.90	8,190.1	61.1	305.2	305.2	11.40	10.83	-5.00
8,352.0	61.40	85.60	8,206.3	63.1	332.7	332.7	12.53	12.50	-0.94
8,383.0	64.90	88.00	8,220.3	64.7	360.3	360.3	13.23	11.29	7.74
8,415.0	68.00	91.20	8,233.1	64.9	389.6	389.6	13.34	9.69	10.00
8,447.0	70.10	95.20	8,244.6	63.2	419.4	419.4	13.39	6.56	12.50
8,479.0	71.70	99.30	8,255.0	59.4	449.4	449.4	13.10	5.00	12.81
8,511.0	73.30	103.20	8,264.7	53.4	479.4	479.4	12.65	5.00	12.19
8,543.0	76.40	106.00	8,273.0	45.6	509.2	509.2	12.85	9.69	8.75
8,574.0	80.20	108.00	8,279.3	36.8	538.3	538.3	13.79	12.26	6.45
8,606.0	84.10	110.50	8,283.7	26.3	568.2	568.2	14.44	12.19	7.81
8,638.0	86.30	114.90	8,286.4	14.0	597.6	597.6	15.33	6.88	13.75
8,666.0	87.00	116.90	8,288.0	1.8	622.7	622.7	7.56	2.50	7.14
8,751.0	90.40	115.60	8,289.9	-35.8	698.9	698.9	4.28	4.00	-1.53
<u>8,782.0</u>	91.10	114.40	8,289.5	-48.9	<u>727.0</u>	727.0	4.48	2.26	-3.87
8,814.0	91.10	113.20	8,288.9	-61.8	756.3	756.3	3.75	0.00	-3.75
8,846.0	90.70	112.10	8,288.4	-74.1	785.8	785.8	3.66	-1.25	-3.44
8,877.0	90.50	110.90	8,288.1	-85.5	814.7	814.7	3.92	-0.65	-3.87
8,909.0	90.70	109.10	8,287.8	-96.4	844.7	844.7	5.66	0.63	-5.63
8,941.0	90.30	106.80	8,287.5	-106.3	875.2	875.2	7.30	-1.25	-7.19
8,972.0	89.30	104.90	8,287.6	-114.8	905.0	905.0	6.93	-3.23	-6.13
9,004.0	88.60	102.40	8,288.2	-122.3	936.1	936.1	8.11	-2.19	-7.81
9,036.0	88.60	100.50	8,289.0	-128.7	967.4	967.4	5.94	0.00	-5.94
9,067.0	89.40	98.60	8,289.5	-133.8	998.0	998.0	6.65	2.58	-6.13
9,099.0	90.00	97.00	8,289.7	-138.1	1,029.7	1,029.7	5.34	1.88	-5.00
9,130.0	90.40	95.20	8,289.6	-141.4	1,060.5	1,060.5	5.95	1.29	-5.81
9,162.0	90.60	93.30	8,289.3	-143.8	1,092.4	1,092.4	5.97	0.63	-5.94
9,194.0	90.60	91.50	8,288.9	-145.1	1,124.4	1,124.4	5.62	0.00	-5.63
9,225.0	90.10	90.00	8,288.7	-145.5	1,155.4	1,155.4	5.10	-1.81	-4.84
9,257.0	90.00	89.30	8,288.7	-145.4	1,187.4	1,187.4	2.21	-0.31	-2.19
9,320.0	90.00	89.40	8,288.7	-144.6	1,250.4	1,250.4	0.16	0.00	0.16
9,384.0	90.00	89.40	8,288.7	-144.0	1,314.4	1,314.4	0.00	0.00	0.00
9,447.0	89.30	88.40	8,289.1	-142.8	1,377.4	1,377.4	1.94	-1.11	-1.59
9,510.0	89.10	87.70	8,290.0	-140.6	1,440.3	1,440.3	1.16	-0.32	-1.11
9,573.0	89.40	87.30	8,290.8	-137.9	1,503.3	1,503.3	0.79	0.48	-0.63
9,637.0	89.50	88.20	8,291.4	-135.4	1,567.2	1,567.2	1.41	0.16	1.41
9,700.0	89.30	88.40	8,292.1	-133.5	1,630.2	1,630.2	0.45	-0.32	0.32
9,763.0	89.60	87.90	8,292.7	-131.5	1,693.1	1,693.1	0.93	0.48	-0.79
9,827.0	88.90	88.00	8,293.5	-129.2	1,757.1	1,757.1	1.10	-1.09	0.16
9,890.0	88.80	87.90	8,294.8	-126.9	1,820.0	1,820.0	0.22	-0.16	-0.16
9,953.0	88.60	87.20	8,296.2	-124.2	1,883.0	1,883.0	1.16	-0.32	-1.11
10,016.0	88.40	88.00	8,297.9	-121.6	1,945.9	1,945.9	1.31	-0.32	1.27
10,048.0	88.30	88.40	8,298.8	-120.6	1,977.9	1,977.9	1.29	-0.31	1.25



Stryker Directional Survey Report



Company:	Mewbourne Oil Company	Local Co-ordinate Reference:	Well: Leo 15 DA Federal Com
Project:	Eddy County, New Mexico	TVD Reference:	GL 3515+20 @ 3535' 0usft (Patterson #45)
Site:	Section 15 T18S-R30E Leo 15 DA Federal Com	MD Reference:	GL 3515+20 @ 3535' 0usft (Patterson #45)
Well:	Leo 15 DA Federal Com	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker EDM

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)
10,111.0	89.30	89.30	8,300.1	-119.3	2,040.8	2,040.8	2.14	1.59	1.43
10,174.0	90.10	89.30	8,300.4	-118.5	2,103.8	2,103.8	1.27	1.27	0.00
10,237.0	90.00	89.60	8,300.4	-117.9	2,166.8	2,166.8	0.50	-0.16	0.48
10,301.0	88.80	89.60	8,301.1	-117.5	2,230.8	2,230.8	1.88	-1.88	0.00
10,364.0	88.50	88.90	8,302.5	-116.7	2,293.8	2,293.8	1.21	-0.48	-1.11
10,427.0	88.90	88.40	8,304.0	-115.2	2,356.8	2,356.8	1.02	0.63	-0.79
10,490.0	88.60	89.10	8,305.3	-113.8	2,419.7	2,419.7	1.21	-0.48	1.11
10,554.0	89.60	90.50	8,306.3	-113.6	2,483.7	2,483.7	2.69	1.56	2.19
10,617.0	90.00	91.40	8,306.6	-114.6	2,546.7	2,546.7	1.56	0.63	1.43
10,674.0	90.10	91.00	8,306.5	-115.8	2,603.7	2,603.7	0.72	0.18	-0.70
10,737.0	89.50	90.80	8,306.7	-116.8	2,666.7	2,666.7	1.00	-0.95	-0.32
10,800.0	88.50	89.60	8,307.8	-117.0	2,729.7	2,729.7	2.48	-1.59	-1.90
10,863.0	88.10	89.30	8,309.7	-116.4	2,792.6	2,792.6	0.79	-0.63	-0.48
10,926.0	87.50	89.10	8,312.1	-115.5	2,855.6	2,855.6	1.00	-0.95	-0.32
10,990.0	89.80	89.30	8,313.6	-114.7	2,919.6	2,919.6	3.61	3.59	0.31
11,053.0	89.50	88.50	8,314.0	-113.4	2,982.5	2,982.5	1.36	-0.48	-1.27
11,117.0	89.10	87.00	8,314.8	-110.9	3,046.5	3,046.5	2.43	-0.63	-2.34
11,180.0	89.30	88.40	8,315.7	-108.4	3,109.4	3,109.4	2.24	0.32	2.22
11,244.0	89.30	89.10	8,316.5	-107.0	3,173.4	3,173.4	1.09	0.00	1.09
11,307.0	88.60	88.60	8,317.6	-105.7	3,236.4	3,236.4	1.37	-1.11	-0.79
11,370.0	89.00	89.40	8,318.9	-104.6	3,299.4	3,299.4	1.42	0.63	1.27
11,433.0	88.90	89.40	8,320.1	-104.0	3,362.4	3,362.4	0.16	-0.16	0.00
11,497.0	88.60	89.40	8,321.5	-103.3	3,426.3	3,426.3	0.47	-0.47	0.00
11,560.0	89.10	89.80	8,322.7	-102.9	3,489.3	3,489.3	1.02	0.79	0.63
11,623.0	89.10	90.00	8,323.7	-102.8	3,552.3	3,552.3	0.32	0.00	0.32
11,686.0	90.50	91.20	8,324.0	-103.4	3,615.3	3,615.3	2.93	2.22	1.90
11,750.0	93.40	91.20	8,321.8	-104.8	3,679.2	3,679.2	4.53	4.53	0.00
11,813.0	93.30	91.00	8,318.1	-106.0	3,742.1	3,742.1	0.35	-0.16	-0.32
11,876.0	92.00	89.60	8,315.2	-106.3	3,805.1	3,805.1	3.03	-2.06	-2.22
11,940.0	91.90	89.30	8,313.0	-105.7	3,869.0	3,869.0	0.49	-0.16	-0.47
12,003.0	91.40	88.60	8,311.2	-104.5	3,932.0	3,932.0	1.37	-0.79	-1.11
12,066.0	90.90	88.20	8,309.9	-102.8	3,994.9	3,994.9	1.02	-0.79	-0.63
12,129.0	91.20	88.00	8,308.8	-100.7	4,057.9	4,057.9	0.57	0.48	-0.32
12,193.0	91.50	87.90	8,307.3	-98.4	4,121.8	4,121.8	0.49	0.47	-0.16
12,256.0	89.70	87.90	8,306.6	-96.1	4,184.8	4,184.8	2.86	-2.86	0.00
12,319.0	87.80	88.00	8,308.0	-93.8	4,247.7	4,247.7	3.02	-3.02	0.16
12,382.0	88.70	87.50	8,309.9	-91.4	4,310.6	4,310.6	1.63	1.43	-0.79
12,445.0	90.30	88.90	8,310.5	-89.4	4,373.6	4,373.6	3.37	2.54	2.22
12,509.0	91.10	89.60	8,309.7	-88.5	4,437.6	4,437.6	1.66	1.25	1.09
12,572.0	92.70	90.00	8,307.6	-88.3	4,500.6	4,500.6	2.62	2.54	0.63
12,595.0	93.50	89.80	8,306.3	-88.3	4,523.5	4,523.5	3.58	3.48	-0.87
12,649.0	93.50	89.80	8,303.0	-88.1	4,577.4	4,577.4	0.00	0.00	0.00

12649 MD Projected to Bit PBHL Leo 15 Fed Com #1H



Stryker Directional Survey Report



Company:	Mewbourne Oil Company	Local Co-ordinate Reference:	Well: Leo 15 DA Federal Com
Project:	Eddy County, New Mexico	TVD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Site:	Section 15 T18S R30E Leo 15 DA Federal Com	MD Reference:	GL 3515+20 @ 3535.0usft (Patterson #45)
Well:	Leo 15 DA Federal Com	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker EDM

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)
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Design Annotations:					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			Comment
		+N/S (usft)	+E/W (usft)		
7,600.0	7,599.3	37.9	-35.7		7600' MD MS Gyro Survey
12,649.0	8,303.0	-88.1	4,577.4		12649' MD Projected to Bit

Operating Company Mewbourne Oil Co.
 Well Name & Number Leo 15 DA Fed Com #1H
 Sales Ticket Number 6554504

Company Rep Shane Heinz
 Field Joseph Haynes
 BOT Service Rep Joseph Haynes



Date 7/23/2014

District Location Odessa, TX

	Size	Weight	Grade	ID	Drift	Thread	Capacity	Length	Burst	Collapse
Casing	7.000	26.00	110000	6.276	6.151	LTC / 8RD	0.03826	8.720.00	9.955	6.230
Top Liner	4.500	13.50	110000	3.920	3.795	LTC / 8RD	0.01492	4.151.08	12.410	10.680
Bot Liner										

TVD	8298.00	KOP	8703.00	Open Hole	6.125	Casing Vol. (bbl)	322.4
Carry Fluid Weight (ppg)	8.4	Proppant Content (ppa)		Max Drill Out Size	0		

	Comm. Number	Description	Depth	Length	OD	ID	Ball Seat ID	Shear Press	Max Rate (BPM)	Displ. (Bbl)
Liner Top	1	10292414	JR Slv w/4.750" Alt Seal Bore ID	8425.00	4.00	5.750	3.913	1670		

Zone Length	H409400008	S3 Hyd Set Packer	8429.00	4.64	5.875	3.875				
	H299710014	4-1/2" 13.50 P-110 LTC Nipple	8433.64	8.09	4.500	3.920				
		8 Joints of 4-1/2-13.5 LTC CSG	8441.73	333.71	4.500	3.920				
	H810090200	3.500" EXPress Slv (Zone 20)	8775.44	2.40	5.750		3.416	2286		
		3 Joints of 4-1/2-13.5 LTC CSG	8777.84	126.23	4.500	3.920				
	H409360008	OH PACKER #19	8904.07	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	8907.96	84.97	4.500	3.920				
	H810090199	3.436" EXPress Slv (Zone 19)	8982.99	2.40	5.750		3.365	2286		
		3 Joints of 4-1/2-13.5 LTC CSG	8995.33	126.03	4.500	3.920				
	H409360008	OH PACKER #18	9121.36	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	9125.25	82.91	4.500	3.920				
	H810090198	3.375" EXPress Slv (Zone 18)	9208.16	2.40	5.750		3.323	2286		
		2 Joints of 4-1/2-13.5 LTC CSG	9210.56	84.33	4.500	3.920				
	H409360008	OH PACKER #17	9284.89	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	9298.78	85.17	4.500	3.920				
	H810090197	3.313" EXPress Slv (Zone 17)	9383.95	2.40	5.750		3.200	2286		
		3 Joints of 4-1/2-13.5 LTC CSG	9386.35	126.72	4.500	3.920				
	H409360008	OH PACKER #16	9513.07	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	9516.96	84.34	4.500	3.920				
	H810090196	3.250" EXPress Slv (Zone 16)	9601.30	2.40	5.750		3.198	2286		
		2 Joints of 4-1/2-13.5 LTC CSG	9603.70	84.30	4.500	3.920				
	H409360008	OH PACKER #15	9688.00	3.89	5.820	3.875		2154		

Operating Company Mewbourne Oil Co.
 Well Name & Number Leo 15 DA Fed Com #1H
 Sales Ticket Number 6554504
 Date 7/23/2014

Company Rep Shane Heinz
 Field
 BOT Service Rep Joseph Haynes
 District Location Odessa, TX



	Size	Weight	Grade	ID	Drift	Thread	Capacity	Length	Burst	Collapse		
Casing	7.000	26.00	110000	6.276	6.151	LTC / 8RD	0.03826	8720.00	9,955	6,230		
Top Liner	4.500	13.50	110000	3.920	3.795	LTC / 8RD	0.01492	4,151.08	12,410	10,680		
Bott Liner												
TVD	8298.00			KOP		8703.00		Open Hole	6.125	Casing Vol. (bbl)	322.4	
Carry Fluid Weight (ppg)			8.4		Proppant Content (ppa)				Max Drill Out Size			0

	Comm. Number	Description	Depth	Length	OD	ID	Ball Seat ID	Shear Press.	Max Rate (OPM)	Displ. (BBL)
		2 Joints of 4-1/2-13.5 LTC CSG	9691.89	83.39	4.500	3.920				
	H810090195	3.188" EXPress Slv (Zone 15)	9775.28	2.40	5.750		3.135	2286		
		3 Joints of 4-1/2-13.5 LTC CSG	9777.68	125.48	4.500	3.920				
	H409360008	OH PACKER #14	9903.16	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	9907.05	85.20	4.500	3.920				
	H810090194	3.125" EXPress Slv (Zone 14)	9992.25	2.40	5.750		3.073	2286		
		2 Joints of 4-1/2-13.5 LTC CSG	9994.65	84.69	4.500	3.920				
	H409360008	OH PACKER #13	10079.34	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	10083.23	84.35	4.500	3.920				
	H810090193	3.063" EXPress Slv (Zone 13)	10167.58	2.40	5.750		3.040	2286		
		3 Joints of 4-1/2-13.5 LTC CSG	10169.98	123.13	4.500	3.920				
	H409360008	OH PACKER #12	10293.11	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	10297.00	85.20	4.500	3.920				
	H810090192	3.000" EXPress Slv (Zone 12)	10382.20	2.40	5.750		2.948	2286		
		2 Joints of 4-1/2-13.5 LTC CSG	10384.60	83.48	4.500	3.920				
	H409360008	OH PACKER #11	10468.08	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	10471.97	84.33	4.500	3.920				
	H810090191	2.938" EXPress Slv (Zone 11)	10556.30	2.40	5.750		2.885	2286		
		3 Joints of 4-1/2-13.5 LTC CSG	10558.70	124.64	4.500	3.920				
	H409360008	OH PACKER #10	10683.34	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	10687.23	84.35	4.500	3.920				
	H810090190	2.875" EXPress Slv (Zone 10)	10771.58	2.40	5.750		2.823	2286		
		3 Joints of 4-1/2-13.5 LTC CSG	10773.98	123.14	4.500	3.920				
	H409360008	OH PACKER #9	10897.12	3.89	5.820	3.875		2154		
		2 Joints of 4-1/2-13.5 LTC CSG	10901.01	84.30	4.500	3.920				
	H810090189	2.813" EXPress Slv (Zone 9)	10985.31	2.40	5.750		2.760	2286		

Operating Company Mewbourne Oil Co.
 Well Name & Number Leo 15 DA Fed Com #1H
 Sales Ticket Number 6554504
 Date 7/23/2014

Company Rep Shane Heinz
 Field
 BOT Service Rep Joseph Haynes
 District Location Odessa, TX



	Size	Weight	Grade	ID	Drift	Thread	Capacity	Length	Burst	Collapse
Casing	7.000	26.00	110000	6.276	6.151	LTC / 8RD	0.03826	8,720.00	9,955	6,230
Top Liner	4.500	13.50	110000	3.920	3.795	LTC / 8RD	0.01492	4,151.08	12,410	10,680
Bot Liner										
TVD	8298.00		KOP	8703.00		Open Hole	6.125		Casing Vol. (bbl)	322.4
Carry Fluid Weight (ppg)	8.4		Propan Content (ppa)			Max Drill Out Size	0			

Comm. Number	Description	Depth	Length	OD	ID	Ball Seat ID	Shear Press	Max Rate (BPM)	Displ. (BSL)
	2 Joints of 4-1/2-13.5 LTC CSG	10987.71	82.48	4.500	3.920				
H409360008	OH PACKER #8	11070.19	3.89	5.820	3.875		2154		
	2 Joints of 4-1/2-13.5 LTC CSG	11074.08	84.48	4.500	3.920				
H810090188	2.750" EXPress Slv (Zone 8)	11158.56	2.40	5.750		2.698	2286		
	3 Joints of 4-1/2-13.5 LTC CSG	11160.96	125.84	4.500	3.920				
H409360008	OH PACKER #7	11286.80	3.89	5.820	3.875		2154		
	2 Joints of 4-1/2-13.5 LTC CSG	11290.69	83.23	4.500	3.920				
H810090187	2.688" EXPress Slv (Zone 7)	11373.92	2.40	5.750		2.635	2286		
	2 Joints of 4-1/2-13.5 LTC CSG	11376.32	82.89	4.500	3.920				
H409360008	OH PACKER #6	11459.21	3.89	5.820	3.875		2154		
	2 Joints of 4-1/2-13.5 LTC CSG	11463.10	85.19	4.500	3.920				
H810090186	2.625" EXPress Slv (Zone 6)	11548.29	2.40	5.750		2.573	2286		
	3 Joints of 4-1/2-13.5 LTC CSG	11550.69	127.07	4.500	3.920				
H409360008	OH PACKER #5	11677.76	3.89	5.820	3.875		2154		
	2 Joints of 4-1/2-13.5 LTC CSG	11681.65	82.59	4.500	3.920				
H810090185	2.563" EXPress Slv (Zone 5)	11764.24	2.40	5.750		2.510	2286		
	2 Joints of 4-1/2-13.5 LTC CSG	11766.64	83.78	4.500	3.920				
H409360008	OH PACKER #4	11850.42	3.89	5.820	3.875		2154		
	2 Joints of 4-1/2-13.5 LTC CSG	11854.31	84.30	4.500	3.920				
H810090184	2.500" EXPress Slv (Zone 4)	11938.61	2.40	5.750		2.448	2286		
	3 Joints of 4-1/2-13.5 LTC CSG	11941.01	127.08	4.500	3.920				
H409360008	OH PACKER #3	12068.09	3.89	5.820	3.875		2154		
	2 Joints of 4-1/2-13.5 LTC CSG	12071.98	85.19	4.500	3.920				
H810090183	2.438" EXPress Slv (Zone 3)	12157.17	2.40	5.750		2.386	2286		
	3 Joints of 4-1/2-13.5 LTC CSG	12159.57	125.05	4.500	3.920				
H409360008	OH PACKER #2	12284.62	3.89	5.820	3.875		2154		

Company Rep Shane Heinz
Field
BOT Service Rep Joseph Haynes
District Location Odessa, TX

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