



Legacy Reserves

Lea County, NM (NAD83)

Lea

Lea Unit #41H

Original Wellbore

HOBBS OCD
OCT 25 2018
RECEIVED

Design: Original Wellbore

Daily Survey Report

31 May, 2018



Company: Legacy Reserves
Project: Lea County, NM (NAD83)
Site: Lea
Well: Lea Unit #41H
Wellbore: Original Wellbore
Design: Original Wellbore

Local Co-ordinate Reference: Well Lea Unit #41H
TVD Reference: RKB @ 3694.0usft
MD Reference: RKB @ 3694.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project	Lea County, NM (NAD83)
Map System:	US State Plane 1983
Geo Datum:	North American Datum 1983
Map Zone:	New Mexico Eastern Zone
System Datum:	Mean Sea Level

Site	Lea				
Site Position:		Northing:	567,587.00 usft	Latitude:	32° 33' 27.391 N
From:	Map	Easting:	797,256.10 usft	Longitude:	103° 30' 9.733 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.45 °

Well	Lea Unit #41H				
Well Position	+N/-S	0.0 usft	Northing:	567,548.30 usft	Latitude: 32° 33' 27.350 N
	+E/-W	0.0 usft	Easting:	792,790.20 usft	Longitude: 103° 31' 1.914 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	3,694.0 usft	Ground Level: 3,676.0 usft

Wellbore	Original Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/1/2018	6.73	60.52	48,235

Design	Original Wellbore				
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	4.09	

Survey Program		Date	5/31/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
136.7	5,382.7	Gyro Surveys (Original Wellbore)	GYRO-MWD	Gyro MWD	
5,443.0	17,214.7	As Drilled (Original Wellbore)	MWD+HDGM	OWSG MWD + HDGM	

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
136.7	0.60	111.80	136.7	-0.2	-0.3	0.7	0.44
232.7	0.36	141.93	232.7	-0.6	-0.7	1.3	0.35
322.7	0.46	115.82	322.7	-0.9	-1.1	1.8	0.23
414.7	0.63	184.89	414.7	-1.6	-1.7	2.1	0.69
504.7	0.68	128.99	504.7	-2.4	-2.6	2.5	0.68
588.7	0.48	149.34	588.7	-3.0	-3.2	3.0	0.34
685.7	0.50	161.36	685.7	-3.7	-3.9	3.4	0.11
775.7	0.41	173.04	775.7	-4.4	-4.6	3.6	0.14
866.7	0.54	165.47	866.7	-5.1	-5.4	3.7	0.16
957.7	0.64	158.83	957.7	-5.9	-6.2	4.0	0.13

Company: Legacy Reserves
Project: Lea County, NM (NAD83)
Site: Lea
Well: Lea Unit #41H
Wellbore: Original Wellbore
Design: Original Wellbore

Local Co-ordinate Reference: Well Lea Unit #41H
TVD Reference: RKB @ 3694.0usft
MD Reference: RKB @ 3694.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
1,049.7	0.67	163.62	1,049.7	-6.9	-7.2	4.3	0.07
1,138.7	0.67	171.85	1,138.7	-7.9	-8.3	4.5	0.11
1,233.7	0.63	204.56	1,233.7	-8.9	-9.3	4.4	0.39
1,421.7	0.59	109.53	1,421.7	-10.2	-10.5	4.9	0.48
1,610.7	0.99	155.84	1,610.7	-11.9	-12.4	6.5	0.38
1,704.7	1.04	214.64	1,704.6	-13.3	-13.8	6.3	1.06
1,893.7	0.46	345.86	1,893.6	-14.1	-14.5	5.2	0.73
1,987.7	2.55	7.92	1,987.6	-11.6	-12.0	5.4	2.27
2,082.7	2.67	7.30	2,082.5	-7.3	-7.8	5.9	0.13
2,176.7	2.44	5.44	2,176.4	-3.1	-3.6	6.4	0.26
2,270.7	2.20	8.80	2,270.3	0.7	0.2	6.9	0.29
2,364.7	2.02	10.49	2,364.3	4.1	3.6	7.4	0.20
2,459.7	1.87	10.48	2,459.2	7.3	6.8	8.0	0.16
2,553.7	1.80	13.17	2,553.2	10.3	9.7	8.6	0.12
2,647.7	1.67	25.93	2,647.1	13.0	12.4	9.6	0.43
2,741.7	1.58	12.39	2,741.1	15.6	14.9	10.5	0.42
2,930.7	2.42	8.60	2,930.0	22.1	21.4	11.6	0.45
3,024.7	3.30	353.09	3,023.8	26.8	26.0	11.6	1.24
3,119.7	3.29	6.77	3,118.7	32.2	31.4	11.6	0.83
3,213.7	3.17	10.94	3,212.5	37.5	36.7	12.4	0.28
3,402.7	2.98	11.20	3,401.3	47.5	46.6	14.3	0.10
3,496.7	2.90	8.52	3,495.1	52.3	51.4	15.2	0.17
3,591.7	2.56	3.42	3,590.0	56.8	55.9	15.6	0.44
3,686.7	2.08	6.52	3,685.0	60.7	59.7	16.0	0.52
3,780.7	1.79	5.30	3,778.9	63.9	62.8	16.3	0.31
3,874.7	1.58	2.84	3,872.9	66.6	65.6	16.5	0.24
3,969.7	1.25	358.13	3,967.8	69.0	67.9	16.5	0.37
4,063.7	1.08	356.09	4,061.8	70.9	69.9	16.4	0.19
4,157.7	0.91	352.02	4,155.8	72.5	71.5	16.3	0.20
4,252.7	0.80	348.59	4,250.8	73.8	72.9	16.0	0.13
4,346.7	0.71	342.70	4,344.8	75.0	74.1	15.7	0.13
4,441.7	0.60	337.79	4,439.8	76.0	75.1	15.4	0.13
4,535.7	0.48	340.26	4,533.8	76.8	75.9	15.0	0.13
4,629.7	0.43	340.87	4,627.8	77.5	76.6	14.8	0.05
4,724.7	0.36	336.12	4,722.8	78.1	77.2	14.6	0.08
4,818.7	0.36	333.17	4,816.8	78.6	77.8	14.3	0.02
4,912.7	0.40	331.66	4,910.8	79.1	78.3	14.0	0.04
5,007.7	0.40	333.19	5,005.8	79.7	78.9	13.7	0.01
5,101.7	0.35	330.55	5,099.8	80.2	79.5	13.4	0.06
5,196.7	0.32	339.19	5,194.8	80.7	80.0	13.2	0.06
5,290.7	0.31	340.74	5,288.8	81.2	80.4	13.0	0.01
5,382.7	0.45	352.90	5,380.8	81.7	81.0	12.9	0.17
5,443.0	0.36	19.44	5,441.0	82.2	81.4	12.9	0.34
5,520.0	0.59	9.72	5,518.0	82.8	82.1	13.1	0.32

Company: Legacy Reserves
Project: Lea County, NM (NAD83)
Site: Lea
Well: Lea Unit #41H
Wellbore: Original Wellbore
Design: Original Wellbore

Local Co-ordinate Reference: Well Lea Unit #41H
TVD Reference: RKB @ 3694.0usft
MD Reference: RKB @ 3694.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
5,671.0	0.50	359.74	5,669.0	84.2	83.5	13.2	0.09
5,765.0	0.33	350.49	5,763.0	84.9	84.2	13.1	0.19
5,860.0	0.56	355.05	5,858.0	85.6	84.9	13.1	0.24
5,954.0	0.58	352.97	5,952.0	86.5	85.8	13.0	0.03
6,049.0	0.59	347.57	6,047.0	87.5	86.8	12.8	0.06
6,143.0	0.59	345.91	6,141.0	88.4	87.7	12.6	0.02
6,237.0	0.38	337.87	6,235.0	89.1	88.5	12.3	0.23
6,331.0	0.51	336.93	6,329.0	89.8	89.2	12.1	0.14
6,426.0	0.27	336.54	6,424.0	90.4	89.8	11.8	0.25
6,520.0	0.27	295.10	6,518.0	90.6	90.1	11.5	0.20
6,614.0	0.21	285.56	6,612.0	90.8	90.2	11.2	0.08
6,708.0	0.15	280.34	6,706.0	90.8	90.3	10.9	0.07
6,802.0	0.24	347.06	6,800.0	91.0	90.5	10.7	0.24
6,896.0	0.28	317.98	6,894.0	91.4	90.8	10.5	0.14
6,990.0	0.44	288.93	6,988.0	91.6	91.1	10.0	0.25
7,084.0	0.31	286.60	7,082.0	91.8	91.3	9.4	0.14
7,178.0	0.51	261.03	7,176.0	91.7	91.3	8.8	0.28
7,272.0	0.50	273.77	7,270.0	91.6	91.3	7.9	0.12
7,366.0	0.59	258.75	7,364.0	91.5	91.2	7.1	0.18
7,460.0	0.66	277.49	7,458.0	91.4	91.2	6.0	0.23
7,554.0	0.67	263.88	7,552.0	91.3	91.2	5.0	0.17
7,648.0	0.67	272.27	7,645.9	91.2	91.2	3.9	0.10
7,742.0	0.80	284.82	7,739.9	91.3	91.4	2.7	0.22
7,836.0	0.70	297.50	7,833.9	91.7	91.8	1.5	0.21
7,930.0	0.59	288.01	7,927.9	92.0	92.2	0.6	0.16
8,024.0	0.65	279.75	8,021.9	92.2	92.4	-0.4	0.11
8,118.0	0.57	262.59	8,115.9	92.1	92.5	-1.4	0.21
8,212.0	0.64	256.20	8,209.9	91.9	92.3	-2.4	0.10
8,306.0	0.50	256.64	8,303.9	91.6	92.1	-3.3	0.15
8,400.0	0.53	247.45	8,397.9	91.3	91.8	-4.1	0.09
8,494.0	0.27	229.67	8,491.9	90.9	91.5	-4.7	0.30
8,589.0	0.31	182.79	8,586.9	90.5	91.1	-4.8	0.25
8,683.0	0.56	126.14	8,680.9	90.0	90.6	-4.5	0.50
8,777.0	0.50	103.65	8,774.9	89.7	90.2	-3.7	0.23
8,871.0	0.36	109.30	8,868.9	89.6	90.0	-3.0	0.16
8,965.0	0.83	156.18	8,962.9	88.9	89.3	-2.5	0.68
9,058.0	4.03	357.26	9,055.8	91.5	91.9	-2.4	5.18
9,152.0	14.49	0.81	9,148.5	106.6	107.0	-2.4	11.14
9,246.0	24.25	4.94	9,237.0	137.7	138.1	-0.5	10.48
9,335.0	31.34	6.37	9,315.7	179.2	179.4	3.6	8.00
9,395.0	40.09	7.02	9,364.4	214.1	214.1	7.7	14.60
9,434.0	46.36	7.20	9,392.8	240.8	240.6	11.0	16.08
9,481.0	55.37	7.62	9,422.4	277.1	276.7	15.7	19.18
9,528.0	57.40	7.82	9,448.4	316.2	315.5	21.0	4.33
9,575.0	58.70	6.81	9,473.3	356.0	355.1	26.1	3.31

Company: Legacy Reserves
Project: Lea County, NM (NAD83)
Site: Lea
Well: Lea Unit #41H
Wellbore: Original Wellbore
Design: Original Wellbore

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Lea Unit #41H
 RKB @ 3694.0usft
 RKB @ 3694.0usft
 Grid
 Minimum Curvature
 EDM 5000.1 Single User Db

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	
9,622.0	65.80	4.54	9,495.2	397.6	396.4	30.2	15.70	
9,637.0	68.49	4.08	9,501.0	411.4	410.2	31.2	18.15	
9,649.0	70.37	3.90	9,505.2	422.6	421.4	32.0	15.73	
9,743.0	75.63	3.51	9,532.7	512.5	511.1	37.8	5.61	
9,790.0	77.82	3.60	9,543.5	558.2	556.7	40.6	4.66	
9,837.0	79.73	3.71	9,552.6	604.3	602.7	43.5	4.07	
9,925.0	84.78	3.28	9,564.5	691.5	689.8	48.9	5.76	
9,933.3	85.39	3.24	9,565.2	699.7	698.0	49.3	7.36	
FTP-Lea 41H								
9,980.0	88.82	3.01	9,567.6	746.4	744.6	51.9	7.36	
10,019.0	89.40	2.76	9,568.2	785.4	783.5	53.8	1.62	
10,114.0	91.14	3.44	9,567.7	880.3	878.4	59.0	1.97	
10,208.0	92.15	3.86	9,565.0	974.3	972.1	65.0	1.16	
10,301.0	92.02	4.73	9,561.6	1,067.2	1,064.8	71.9	0.95	
10,395.0	92.45	4.94	9,558.0	1,161.2	1,158.4	79.8	0.51	
10,489.0	91.01	5.12	9,555.1	1,255.1	1,252.0	88.1	1.54	
10,582.0	89.19	4.50	9,555.0	1,348.1	1,344.7	95.9	2.07	
10,676.0	89.93	4.46	9,555.7	1,442.1	1,438.4	103.2	0.79	
10,770.0	90.67	3.15	9,555.2	1,536.1	1,532.2	109.4	1.60	
10,864.0	90.10	3.55	9,554.6	1,630.1	1,626.0	114.9	0.74	
10,957.0	90.87	3.66	9,553.8	1,723.1	1,718.8	120.8	0.84	
11,051.0	91.51	4.06	9,551.8	1,817.0	1,812.6	127.1	0.80	
11,145.0	89.87	5.02	9,550.7	1,911.0	1,906.3	134.6	2.02	
11,238.0	87.61	4.92	9,552.8	2,004.0	1,998.9	142.6	2.43	
11,332.0	88.45	4.97	9,556.0	2,097.9	2,092.5	150.7	0.90	
11,426.0	89.93	5.85	9,557.3	2,191.9	2,186.1	159.6	1.83	
11,520.0	88.72	4.64	9,558.4	2,285.8	2,279.7	168.2	1.82	
11,614.0	88.22	3.68	9,560.9	2,379.8	2,373.4	175.0	1.15	
11,707.0	88.12	3.65	9,563.9	2,472.8	2,466.1	180.9	0.11	
11,801.0	89.93	3.80	9,565.5	2,566.7	2,559.9	187.0	1.93	
11,896.0	91.55	4.04	9,564.3	2,661.7	2,654.7	193.5	1.72	
11,990.0	90.57	3.42	9,562.5	2,755.7	2,748.5	199.6	1.23	
12,083.0	91.04	3.36	9,561.2	2,848.7	2,841.3	205.1	0.51	
12,177.0	90.24	3.54	9,560.2	2,942.7	2,935.1	210.8	0.87	
12,272.0	90.44	4.20	9,559.6	3,037.7	3,029.9	217.2	0.73	
12,365.0	89.56	3.49	9,559.6	3,130.7	3,122.7	223.4	1.22	
12,458.0	90.30	3.50	9,559.7	3,223.7	3,215.5	229.1	0.80	
12,551.0	90.34	4.04	9,559.2	3,316.7	3,308.3	235.2	0.58	
12,644.0	90.64	3.94	9,558.4	3,409.7	3,401.1	241.7	0.34	
12,737.0	90.07	3.43	9,557.8	3,502.7	3,493.9	247.7	0.82	
12,831.0	90.54	2.82	9,557.3	3,596.6	3,587.8	252.8	0.82	
12,924.0	93.13	4.26	9,554.4	3,689.6	3,680.5	258.5	3.19	
13,017.0	91.48	4.20	9,550.6	3,782.5	3,773.2	265.4	1.78	
13,110.0	88.45	3.66	9,550.7	3,875.5	3,866.0	271.8	3.31	

Company: Legacy Reserves
Project: Lea County, NM (NAD83)
Site: Lea
Well: Lea Unit #41H
Wellbore: Original Wellbore
Design: Original Wellbore

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Lea Unit #41H
 RKB @ 3694.0usft
 RKB @ 3694.0usft
 Grid
 Minimum Curvature
 EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
13,204.0	89.09	4.19	9,552.7	3,969.5	3,959.7	278.2	0.88
13,298.0	89.83	4.76	9,553.6	4,063.5	4,053.4	285.5	0.99
13,393.0	89.56	4.46	9,554.1	4,158.5	4,148.1	293.2	0.42
13,487.0	88.12	4.20	9,556.0	4,252.4	4,241.8	300.3	1.56
13,582.0	88.32	4.03	9,558.9	4,347.4	4,336.5	307.1	0.28
13,675.0	89.66	5.12	9,560.6	4,440.4	4,429.2	314.5	1.86
13,768.0	89.93	5.09	9,560.9	4,533.4	4,521.8	322.8	0.29
13,862.0	90.44	4.67	9,560.6	4,627.3	4,615.5	330.8	0.70
13,956.0	90.60	5.32	9,559.8	4,721.3	4,709.1	338.9	0.71
14,050.0	90.00	5.13	9,559.3	4,815.3	4,802.8	347.5	0.67
14,144.0	91.51	5.61	9,558.0	4,909.3	4,896.3	356.3	1.69
14,238.0	90.54	6.26	9,556.3	5,003.2	4,989.8	366.0	1.24
14,331.0	90.47	6.09	9,555.5	5,096.1	5,082.3	376.0	0.20
14,424.0	91.11	5.38	9,554.2	5,189.1	5,174.8	385.3	1.03
14,518.0	90.47	5.63	9,552.9	5,283.1	5,268.3	394.3	0.73
14,611.0	87.54	4.04	9,554.6	5,376.0	5,361.0	402.2	3.58
14,704.0	88.32	3.85	9,557.9	5,469.0	5,453.7	408.6	0.86
14,797.0	88.66	2.42	9,560.4	5,561.9	5,546.5	413.6	1.58
14,891.0	89.60	1.77	9,561.8	5,655.8	5,640.5	417.1	1.22
14,984.0	89.53	2.38	9,562.5	5,748.8	5,733.4	420.4	0.66
15,077.0	89.60	3.53	9,563.2	5,841.8	5,826.3	425.2	1.24
15,170.0	90.71	3.64	9,563.0	5,934.8	5,919.1	431.1	1.20
15,264.0	91.04	3.58	9,561.5	6,028.7	6,012.9	437.0	0.36
15,357.0	89.60	2.58	9,561.0	6,121.7	6,105.7	442.0	1.89
15,450.0	89.97	2.02	9,561.4	6,214.7	6,198.7	445.7	0.72
15,543.0	90.17	3.55	9,561.2	6,307.6	6,291.6	450.2	1.66
15,637.0	89.53	3.87	9,561.5	6,401.6	6,385.4	456.3	0.76
15,730.0	90.20	4.05	9,561.7	6,494.6	6,478.1	462.7	0.75
15,823.0	89.90	4.03	9,561.6	6,587.6	6,570.9	469.3	0.32
15,916.0	90.70	4.36	9,561.1	6,680.6	6,663.7	476.1	0.93
16,009.0	89.60	4.52	9,560.9	6,773.6	6,756.4	483.3	1.20
16,104.0	89.53	4.48	9,561.6	6,866.6	6,851.1	490.7	0.08
16,198.0	90.91	4.70	9,561.3	6,962.6	6,944.8	498.3	1.49
16,291.0	91.75	5.32	9,559.1	7,055.6	7,037.4	506.4	1.12
16,327.0	91.78	5.42	9,558.0	7,091.6	7,073.2	509.7	0.29
16,374.0	92.29	5.12	9,556.3	7,138.5	7,120.0	514.1	1.26
16,468.0	91.34	5.00	9,553.3	7,232.5	7,213.6	522.3	1.02
16,561.0	90.60	5.26	9,551.8	7,325.4	7,306.2	530.7	0.84
16,654.0	90.37	6.73	9,551.0	7,418.4	7,398.7	540.4	1.60
16,748.0	89.19	6.73	9,551.3	7,512.3	7,492.0	551.4	1.26
16,843.0	88.66	7.00	9,553.1	7,607.1	7,586.3	562.7	0.63
16,936.0	87.82	7.21	9,556.0	7,700.0	7,678.6	574.2	0.93
17,030.0	87.31	7.64	9,560.0	7,793.7	7,771.7	586.4	0.71
17,124.0	86.61	7.52	9,565.0	7,887.4	7,864.7	598.8	0.76

Company: Legacy Reserves
Project: Lea County, NM (NAD83)
Site: Lea
Well: Lea Unit #41H
Wellbore: Original Wellbore
Design: Original Wellbore

Local Co-ordinate Reference: Well Lea Unit #41H
TVD Reference: RKB @ 3694.0usft
MD Reference: RKB @ 3694.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)
17,156.0	86.33	7.59	9,566.9	7,919.3	7,896.4	603.0	0.90
17,211.3	86.33	7.59	9,570.5	7,974.4	7,951.1	610.2	0.00
BHL-Lea 41H							
17,214.7	86.33	7.59	9,570.7	7,977.8	7,954.5	610.7	0.00

Checked By: _____ Approved By: _____ Date: _____