



Legacy Reserves

Lea County, NM (NAD-27 2015)

Lea Unit #34H

Lea Unit #34H

30-025-42344

Wellbore #1

HOBBS OCD
MAR 06 2017
RECEIVED

Survey: TDS MWD Survey #1

Standard Survey Report

28 October, 2015





Survey Report



Company: Legacy Reserves
Project: Lea County, NM (NAD-27 2015)
Site: Lea Unit #34H
Well: Lea Unit #34H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Lea Unit #34H
TVD Reference: KB @ 3676.01ft (McVay 4)
MD Reference: KB @ 3676.01ft (McVay 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project Lea County, NM (NAD-27 2015)

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site Lea Unit #34H

Site Position: Northing: 575,782.60 usft Latitude: 32° 34' 48.851 N
From: Map Easting: 753,562.80 usft Longitude: 103° 30' 36.579 W
Position Uncertainty: 0.00 ft Slot Radius: 13.20 in Grid Convergence: 0.44 °

Well Lea Unit #34H

Well Position +N/-S 0.00 ft Northing: 575,782.60 usft Latitude: 32° 34' 48.851 N
+E/-W 0.00 ft Easting: 753,562.80 usft Longitude: 103° 30' 36.579 W
Position Uncertainty 0.00 ft Wellhead Elevation: 0.00 ft Ground Level: 3,658.01 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/02/15	7.14	60.42	48,331

Design Wellbore #1

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	358.87

Survey Program Date 10/28/15

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
44.08	10,146.40	Gyro Survey #1 (Wellbore #1)	VES-ISCWSA-GYRO-3	Biaxial Semi-Cont. Gyro
10,260.00	15,605.00	TDS MWD Survey #1 (Wellbore #1)	TDS MWD	TDS MWD - Standard

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,146.40	2.23	226.00	10,142.87	17.84	1.26	17.81	0.00	0.00	0.00
10,260.00	2.50	229.80	10,256.38	14.71	-2.22	14.75	0.27	0.24	3.35
First TDS MWD Survey									
10,291.00	2.50	281.30	10,287.35	14.40	-3.40	14.47	7.01	0.00	166.13
10,323.00	3.40	312.10	10,319.31	15.18	-4.79	15.27	5.60	2.81	96.25
10,354.00	5.30	332.00	10,350.22	17.06	-6.14	17.17	7.74	6.13	64.19
10,385.00	7.10	349.90	10,381.04	20.21	-7.15	20.34	8.45	5.81	57.74
10,417.00	7.70	358.60	10,412.78	24.30	-7.55	24.44	3.97	1.88	27.19
10,448.00	9.30	356.60	10,443.43	28.87	-7.75	29.02	5.25	5.16	-6.45
10,480.00	12.10	355.90	10,474.87	34.80	-8.14	34.96	8.76	8.75	-2.19



Survey Report



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Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,511.00	14.90	358.00	10,505.01	42.03	-8.51	42.19	9.17	9.03	6.77
10,542.00	16.10	4.40	10,534.89	50.30	-8.32	50.45	6.73	3.87	20.65
10,574.00	18.40	7.70	10,565.45	59.73	-7.31	59.86	7.81	7.19	10.31
10,606.00	22.20	4.50	10,595.46	70.76	-6.16	70.87	12.37	11.88	-10.00
10,637.00	26.30	359.00	10,623.72	83.48	-5.82	83.57	15.09	13.23	-17.74
10,669.00	31.60	355.00	10,651.71	98.93	-6.67	99.04	17.62	16.56	-12.50
10,700.00	36.10	353.30	10,677.45	116.10	-8.44	116.24	14.83	14.52	-5.48
10,731.00	39.40	353.30	10,701.96	134.94	-10.66	135.13	10.65	10.65	0.00
10,763.00	43.10	353.90	10,726.01	155.91	-13.01	156.14	11.63	11.56	1.88
10,794.00	46.10	354.60	10,748.09	177.56	-15.18	177.83	9.81	9.68	2.26
10,825.00	49.10	355.80	10,768.99	200.37	-17.09	200.67	10.09	9.68	3.87
10,857.00	52.90	358.70	10,789.12	225.20	-18.27	225.52	13.80	11.88	9.06
10,888.00	57.00	1.60	10,806.93	250.57	-18.19	250.88	15.28	13.23	9.35
10,920.00	60.00	3.10	10,823.64	277.83	-17.06	278.11	10.19	9.38	4.69
10,951.00	64.70	2.60	10,838.03	305.25	-15.70	305.50	15.23	15.16	-1.61
10,980.00	68.30	0.80	10,849.59	331.83	-14.92	332.05	13.66	12.41	-6.21
11,011.00	69.80	359.70	10,860.67	360.77	-14.79	361.00	5.86	4.84	-3.55
11,042.00	71.30	359.50	10,871.00	390.00	-15.00	390.22	4.88	4.84	-0.65
11,074.00	72.70	358.90	10,880.88	420.43	-15.42	420.66	4.72	4.38	-1.88
11,105.00	74.90	358.90	10,889.53	450.20	-15.99	450.42	7.10	7.10	0.00
11,137.00	77.50	357.90	10,897.16	481.26	-16.86	481.50	8.67	8.13	-3.13
11,168.00	80.10	357.20	10,903.19	511.64	-18.16	511.89	8.67	8.39	-2.26
11,199.00	82.60	356.40	10,907.85	542.23	-19.87	542.52	8.46	8.06	-2.58
11,231.00	85.00	357.00	10,911.30	573.99	-21.70	574.31	7.73	7.50	1.88
11,262.00	87.80	358.00	10,913.25	604.90	-23.05	605.23	9.59	9.03	3.23
11,325.00	89.60	358.50	10,914.68	667.85	-24.98	668.21	2.97	2.86	0.79
11,419.00	89.70	358.40	10,915.25	761.81	-27.52	762.21	0.15	0.11	-0.11
11,513.00	90.50	359.00	10,915.09	855.79	-29.65	856.20	1.06	0.85	0.64
11,607.00	89.40	359.10	10,915.17	949.77	-31.21	950.20	1.18	-1.17	0.11
11,702.00	89.90	359.50	10,915.75	1,044.76	-32.37	1,045.20	0.67	0.53	0.42
11,796.00	88.70	0.10	10,916.90	1,138.75	-32.70	1,139.18	1.43	-1.28	0.64
11,890.00	89.10	0.40	10,918.70	1,232.73	-32.29	1,233.13	0.53	0.43	0.32
11,984.00	89.10	0.40	10,920.18	1,326.72	-31.63	1,327.09	0.00	0.00	0.00
12,079.00	88.20	0.00	10,922.42	1,421.69	-31.30	1,422.03	1.04	-0.95	-0.42
12,173.00	88.50	0.20	10,925.13	1,515.65	-31.14	1,515.97	0.38	0.32	0.21
12,267.00	86.50	359.80	10,929.23	1,609.56	-31.14	1,609.86	2.17	-2.13	-0.43
12,361.00	86.70	0.40	10,934.80	1,703.39	-30.97	1,703.67	0.67	0.21	0.64
12,455.00	86.80	0.70	10,940.13	1,797.24	-30.07	1,797.48	0.34	0.11	0.32
12,549.00	88.40	359.80	10,944.07	1,891.15	-29.66	1,891.37	1.95	1.70	-0.96
12,643.00	88.50	359.80	10,946.61	1,985.11	-29.99	1,985.32	0.11	0.11	0.00
12,738.00	89.20	358.20	10,948.52	2,080.08	-31.65	2,080.30	1.84	0.74	-1.68
12,832.00	90.50	357.40	10,948.76	2,174.00	-35.26	2,174.28	1.62	1.38	-0.85
12,926.00	90.50	357.40	10,947.94	2,267.90	-39.52	2,268.24	0.00	0.00	0.00

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13,020.00	90.80	357.90	10,946.87	2,361.82	-43.38	2,362.21	0.62	0.32	0.53
13,114.00	91.10	357.90	10,945.32	2,455.74	-46.82	2,456.19	0.32	0.32	0.00
13,209.00	90.30	358.60	10,944.16	2,550.69	-49.72	2,551.17	1.12	-0.84	0.74
13,303.00	90.90	359.10	10,943.17	2,644.66	-51.61	2,645.17	0.83	0.64	0.53
13,397.00	89.10	359.60	10,943.17	2,738.65	-52.67	2,739.16	1.99	-1.91	0.53
13,491.00	89.30	359.20	10,944.48	2,832.64	-53.66	2,833.15	0.48	0.21	-0.43
13,585.00	90.00	0.10	10,945.06	2,926.63	-54.23	2,927.14	1.21	0.74	0.96
13,680.00	90.50	0.10	10,944.64	3,021.63	-54.07	3,022.11	0.53	0.53	0.00
13,774.00	90.90	0.50	10,943.49	3,115.62	-53.57	3,116.08	0.60	0.43	0.43
13,868.00	89.20	358.80	10,943.41	3,209.62	-54.15	3,210.06	2.56	-1.81	-1.81
13,962.00	89.30	358.80	10,944.64	3,303.59	-56.12	3,304.05	0.11	0.11	0.00
14,056.00	89.30	358.80	10,945.79	3,397.56	-58.08	3,398.04	0.00	0.00	0.00
14,150.00	90.30	359.60	10,946.12	3,491.55	-59.40	3,492.04	1.36	1.06	0.85
14,245.00	89.10	359.00	10,946.62	3,586.54	-60.56	3,587.03	1.41	-1.26	-0.63
14,339.00	88.40	357.60	10,948.67	3,680.47	-63.35	3,681.00	1.66	-0.74	-1.49
14,433.00	88.90	357.90	10,950.88	3,774.37	-67.03	3,774.96	0.62	0.53	0.32
14,527.00	89.60	358.30	10,952.11	3,868.31	-70.15	3,868.94	0.86	0.74	0.43
14,621.00	90.10	357.90	10,952.36	3,962.26	-73.27	3,962.93	0.68	0.53	-0.43
14,715.00	91.10	358.40	10,951.37	4,056.20	-76.30	4,056.92	1.19	1.06	0.53
14,809.00	89.40	358.50	10,950.96	4,150.16	-78.84	4,150.91	1.81	-1.81	0.11
14,904.00	90.00	358.90	10,951.46	4,245.14	-81.00	4,245.91	0.76	0.63	0.42
14,998.00	87.90	358.50	10,953.18	4,339.09	-83.13	4,339.89	2.27	-2.23	-0.43
15,092.00	88.50	358.70	10,956.14	4,433.02	-85.43	4,433.84	0.67	0.64	0.21
15,186.00	89.40	359.20	10,957.86	4,526.98	-87.15	4,527.82	1.10	0.96	0.53
15,281.00	90.10	359.60	10,958.27	4,621.98	-88.14	4,622.82	0.85	0.74	0.42
15,375.00	88.50	359.60	10,959.42	4,715.97	-88.80	4,716.80	1.70	-1.70	0.00
15,469.00	89.50	359.90	10,961.06	4,809.95	-89.21	4,810.77	1.11	1.06	0.32
15,545.00	90.30	359.70	10,961.20	4,885.95	-89.48	4,886.76	1.09	1.05	-0.26
Last TDS MWD Survey									
15,605.00	90.30	359.70	10,960.88	4,945.95	-89.79	4,946.76	0.00	0.00	0.00
Proj to Bit									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,260.00	10,256.38	14.71	-2.22	First TDS MWD Survey
15,545.00	10,961.20	4,885.95	-89.48	Last TDS MWD Survey
15,605.00	10,960.88	4,945.95	-89.79	Proj to Bit

Checked By: _____ Approved By: _____ Date: _____