



Legacy Reserves Operating

Lea County, NM

Hamon Fed Pad

Hamon Fed Com A #10H

Wellbore #1

Survey: MWD Surveys

HOBBS OCD
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Standard Survey Report

14 August, 2017





Integrity Directional Services, LLC

Survey Report



Company:	Legacy Reserves Operating	Local Co-ordinate Reference:	Well Hamon Fed Com A #10H
Project:	Lea County, NM	TVD Reference:	KB=18 @ 3628.00ft
Site:	Hamon Fed Pad	MD Reference:	KB=18 @ 3628.00ft
Well:	Hamon Fed Com A #10H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Multi User Db

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

Site	Hamon Fed Pad		
Site Position:		Northing:	580,846.2000 usft
From:	Map	Easting:	723,480.4000 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32° 35' 43.4649 N
		Longitude:	103° 44' 30.8528 W
		Grid Convergence:	0.32 °

Well	Hamon Fed Com A #10H		
Well Position	+N/-S	0.00 ft	Northing: 575,256.9000 usft
	+E/-W	0.00 ft	Easting: 724,564.7000 usft
Position Uncertainty		0.00 ft	Wellhead Elevation: 0.00 ft
			Latitude: 32° 34' 48.0992 N
			Longitude: 103° 44' 18.5439 W
			Ground Level: 3,610.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/25/2017	7.10	60.52	48,396

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	352.94	

Survey Program	Date 8/14/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name
196.00	15,296.00	MWD Surveys (Wellbore #1)	MWD
			Description
			MWD - Standard

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
196.00	0.90	295.40	195.99	0.66	-1.39	0.83	0.46	0.46	0.00
First MWD Survey									
287.00	1.00	295.20	286.98	1.30	-2.75	1.63	0.11	0.11	-0.22
378.00	0.20	322.90	377.97	1.77	-3.57	2.20	0.91	-0.88	30.44
470.00	0.60	344.30	469.97	2.36	-3.80	2.81	0.46	0.43	23.26
561.00	0.50	354.90	560.97	3.22	-3.96	3.68	0.16	-0.11	11.65
653.00	0.30	329.60	652.97	3.82	-4.12	4.30	0.29	-0.22	-27.50
745.00	0.20	357.10	744.96	4.19	-4.25	4.68	0.17	-0.11	29.89
836.00	0.30	324.80	835.96	4.54	-4.39	5.05	0.19	0.11	-35.49
927.00	0.10	308.70	926.96	4.79	-4.59	5.32	0.23	-0.22	-17.69



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Design: Wellbore #1

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TVD Reference: KB=18 @ 3628.00ft
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Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,017.00	0.10	294.00	1,016.96	4.87	-4.73	5.41	0.03	0.00	-16.33
1,108.00	0.31	256.25	1,107.96	4.84	-5.04	5.43	0.26	0.23	-41.48
1,200.00	0.22	235.33	1,199.96	4.68	-5.42	5.32	0.14	-0.10	-22.74
1,291.00	0.53	269.61	1,290.96	4.58	-5.99	5.28	0.41	0.34	37.67
1,383.00	0.62	263.90	1,382.95	4.53	-6.91	5.34	0.12	0.10	-6.21
1,478.00	0.62	244.30	1,477.95	4.25	-7.88	5.19	0.22	0.00	-20.63
1,574.00	0.60	221.80	1,573.94	3.65	-8.69	4.69	0.25	-0.02	-23.44
1,669.00	0.20	178.10	1,668.94	3.11	-9.01	4.20	0.50	-0.42	-46.00
1,764.00	0.60	27.50	1,763.94	3.39	-8.78	4.44	0.82	0.42	-158.53
1,858.00	1.20	13.60	1,857.93	4.78	-8.32	5.77	0.67	0.64	-14.79
1,953.00	2.10	358.40	1,952.89	7.49	-8.13	8.43	1.05	0.95	-16.00
2,047.00	2.50	3.90	2,046.81	11.25	-8.04	12.16	0.49	0.43	5.85
2,142.00	1.80	354.90	2,141.75	14.81	-8.03	15.68	0.82	-0.74	-9.47
2,237.00	1.40	357.60	2,236.71	17.45	-8.22	18.33	0.43	-0.42	2.84
2,332.00	2.00	359.40	2,331.67	20.27	-8.28	21.14	0.63	0.63	1.89
2,425.00	2.50	356.70	2,424.59	23.92	-8.41	24.77	0.55	0.54	-2.90
2,519.00	2.00	358.00	2,518.52	27.60	-8.59	28.45	0.53	-0.53	1.38
2,613.00	1.50	4.30	2,612.48	30.47	-8.56	31.29	0.57	-0.53	6.70
2,707.00	1.40	13.10	2,706.45	32.82	-8.20	33.58	0.26	-0.11	9.36
2,801.00	0.90	349.20	2,800.43	34.66	-8.08	35.39	0.73	-0.53	-25.43
2,896.00	0.80	341.20	2,895.42	36.02	-8.43	36.78	0.16	-0.11	-8.42
2,990.00	0.70	355.60	2,989.41	37.21	-8.69	38.00	0.23	-0.11	15.32
3,085.00	0.60	10.70	3,084.40	38.28	-8.64	39.05	0.21	-0.11	15.89
3,179.00	0.50	22.50	3,178.40	39.14	-8.39	39.88	0.16	-0.11	12.55
3,274.00	0.40	102.10	3,273.40	39.46	-7.91	40.13	0.61	-0.11	83.79
3,366.00	0.20	132.40	3,365.40	39.28	-7.48	39.90	0.27	-0.22	32.93
3,461.00	0.50	149.60	3,460.39	38.81	-7.15	39.40	0.33	0.32	18.11
3,555.00	0.80	160.80	3,554.39	37.84	-6.72	38.38	0.35	0.32	11.91
3,650.00	0.60	208.90	3,649.38	36.78	-6.74	37.33	0.63	-0.21	50.63
3,745.00	0.70	207.70	3,744.38	35.83	-7.25	36.45	0.11	0.11	-1.26
3,839.00	0.60	210.10	3,838.37	34.89	-7.77	35.58	0.11	-0.11	2.55
3,934.00	0.40	203.20	3,933.37	34.16	-8.15	34.90	0.22	-0.21	-7.26
4,029.00	0.50	216.00	4,028.36	33.52	-8.52	34.31	0.15	0.11	13.47
4,123.00	0.30	264.30	4,122.36	33.16	-9.01	34.02	0.40	-0.21	51.38
4,218.00	0.40	230.70	4,217.36	32.93	-9.51	33.85	0.24	0.11	-35.37
4,313.00	0.50	260.60	4,312.36	32.65	-10.18	33.65	0.26	0.11	31.47
4,409.00	0.30	243.70	4,408.35	32.47	-10.82	33.55	0.24	-0.21	-17.60
4,503.00	0.20	265.40	4,502.35	32.35	-11.20	33.48	0.14	-0.11	23.09
4,598.00	0.00	232.90	4,597.35	32.33	-11.37	33.49	0.21	-0.21	0.00
4,693.00	0.10	136.60	4,692.35	32.27	-11.31	33.42	0.11	0.11	0.00
4,788.00	0.00	53.00	4,787.35	32.21	-11.25	33.35	0.11	-0.11	0.00
4,883.00	0.30	135.80	4,882.35	32.04	-11.08	33.15	0.32	0.32	0.00
4,978.00	0.30	102.50	4,977.35	31.80	-10.66	32.87	0.18	0.00	-35.05



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5,072.00	0.20	79.30	5,071.35	31.78	-10.26	32.80	0.15	-0.11	-24.68
5,167.00	0.40	112.00	5,166.35	31.69	-9.79	32.65	0.27	0.21	34.42
5,262.00	0.20	65.20	5,261.35	31.63	-9.33	32.54	0.32	-0.21	-49.26
5,357.00	0.20	57.20	5,356.35	31.79	-9.04	32.66	0.03	0.00	-8.42
5,476.00	0.00	86.50	5,475.35	31.90	-8.87	32.75	0.17	-0.17	0.00
5,571.00	0.80	294.40	5,570.34	32.18	-9.47	33.10	0.84	0.84	0.00
5,666.00	1.70	274.80	5,665.32	32.57	-11.48	33.73	1.04	0.95	-20.63
5,761.00	2.20	269.20	5,760.27	32.66	-14.71	34.22	0.56	0.53	-5.89
5,856.00	3.60	274.30	5,855.14	32.86	-19.51	35.01	1.50	1.47	5.37
5,950.00	4.60	271.30	5,948.90	33.17	-26.22	36.14	1.09	1.06	-3.19
6,045.00	6.40	277.70	6,043.46	33.96	-35.27	38.04	2.00	1.89	6.74
6,140.00	8.40	279.40	6,137.66	35.81	-47.37	41.36	2.12	2.11	1.79
6,235.00	8.80	278.80	6,231.60	38.05	-61.39	45.31	0.43	0.42	-0.63
6,330.00	8.70	279.80	6,325.49	40.39	-75.66	49.38	0.19	-0.11	1.05
6,425.00	11.10	279.20	6,419.07	43.07	-91.77	54.03	2.53	2.53	-0.63
6,520.00	7.30	277.40	6,512.83	45.31	-106.78	58.10	4.01	-4.00	-1.89
6,615.00	7.30	276.20	6,607.06	46.74	-118.77	60.99	0.16	0.00	-1.26
6,710.00	7.60	276.10	6,701.26	48.06	-131.02	63.80	0.32	0.32	-0.11
6,805.00	7.20	276.50	6,795.47	49.40	-143.18	66.63	0.42	-0.42	0.42
6,900.00	8.00	276.10	6,889.63	50.78	-155.67	69.53	0.84	0.84	-0.42
6,994.00	8.10	276.20	6,982.70	52.19	-168.75	72.54	0.11	0.11	0.11
7,089.00	8.10	276.50	7,076.76	53.67	-182.06	75.64	0.04	0.00	0.32
7,184.00	8.10	276.30	7,170.81	55.16	-195.36	78.76	0.03	0.00	-0.21
7,278.00	8.80	275.60	7,263.79	56.59	-209.10	81.87	0.75	0.74	-0.74
7,372.00	8.70	275.30	7,356.69	57.95	-223.33	84.97	0.12	-0.11	-0.32
7,467.00	8.70	275.60	7,450.60	59.31	-237.64	88.08	0.05	0.00	0.32
7,561.00	8.70	275.50	7,543.52	60.69	-251.79	91.18	0.02	0.00	-0.11
7,656.00	8.70	274.70	7,637.43	61.97	-266.10	94.21	0.13	0.00	-0.84
7,750.00	8.40	273.70	7,730.38	62.99	-280.04	96.94	0.36	-0.32	-1.06
7,845.00	8.30	273.40	7,824.37	63.85	-293.81	99.48	0.11	-0.11	-0.32
7,939.00	8.40	272.40	7,917.38	64.54	-307.44	101.84	0.19	0.11	-1.06
8,033.00	8.00	271.10	8,010.42	64.95	-320.84	103.90	0.47	-0.43	-1.38
8,126.00	8.00	269.60	8,102.51	65.03	-333.78	105.57	0.22	0.00	-1.61
8,221.00	7.90	269.00	8,196.60	64.87	-346.92	107.03	0.14	-0.11	-0.63
8,316.00	7.60	270.20	8,290.73	64.78	-359.73	108.51	0.36	-0.32	1.26
8,410.00	7.60	269.60	8,383.91	64.75	-372.16	110.02	0.08	0.00	-0.64
8,505.00	7.40	263.30	8,478.09	64.00	-384.52	110.78	0.89	-0.21	-6.63
8,600.00	7.60	262.40	8,572.28	62.45	-396.82	110.76	0.24	0.21	-0.95
8,694.00	8.00	265.70	8,665.41	61.14	-409.51	111.02	0.64	0.43	3.51
8,789.00	8.70	270.70	8,759.41	60.73	-423.29	112.31	1.06	0.74	5.26
8,883.00	8.10	267.80	8,852.40	60.56	-437.01	113.83	0.78	-0.64	-3.09
8,978.00	8.00	274.90	8,946.46	60.87	-450.29	115.77	1.05	-0.11	7.47
9,073.00	9.10	278.90	9,040.41	62.60	-464.30	119.20	1.32	1.16	4.21



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9,168.00	8.70	275.80	9,134.26	64.49	-478.87	122.87	0.66	-0.42	-3.26
9,262.00	8.40	283.30	9,227.22	66.78	-492.62	126.84	1.23	-0.32	7.98
9,358.00	7.90	287.90	9,322.25	70.43	-505.72	132.07	0.86	-0.52	4.79
9,458.00	7.47	287.50	9,421.35	74.49	-518.46	137.67	0.43	-0.43	-0.40
9,552.00	9.01	289.35	9,514.38	78.77	-531.24	143.48	1.66	1.64	1.97
9,647.00	8.66	288.21	9,608.25	83.47	-545.05	149.84	0.41	-0.37	-1.20
9,691.00	8.44	288.38	9,651.77	85.52	-551.26	152.65	0.50	-0.50	0.39
9,711.00	8.26	287.33	9,671.55	86.41	-554.02	153.87	1.18	-0.90	-5.25
9,742.00	7.78	292.51	9,702.25	87.88	-558.09	155.83	2.80	-1.55	16.71
9,774.00	9.93	302.71	9,733.87	90.20	-562.41	158.66	8.29	6.72	31.88
9,806.00	13.01	312.55	9,765.23	94.13	-567.39	163.17	11.37	9.63	30.75
9,838.00	13.01	316.50	9,796.41	99.18	-572.52	168.81	2.78	0.00	12.34
9,869.00	14.81	323.19	9,826.50	104.88	-577.30	175.06	7.78	5.81	21.58
9,901.00	15.47	320.11	9,857.39	111.43	-582.48	182.20	3.25	2.06	-9.63
9,933.00	16.92	325.56	9,888.12	118.55	-587.86	189.92	6.56	4.53	17.03
9,963.00	18.46	332.15	9,916.70	126.35	-592.54	198.24	8.41	5.13	21.97
9,995.00	18.24	337.25	9,947.08	135.45	-596.85	207.80	5.06	-0.69	15.94
10,027.00	19.52	339.18	9,977.36	145.06	-600.69	217.81	4.45	4.00	6.03
10,058.00	21.63	343.40	10,006.38	155.38	-604.16	228.48	8.32	6.81	13.61
10,089.00	24.09	349.29	10,034.95	167.07	-606.97	240.43	10.83	7.94	19.00
10,121.00	26.29	353.07	10,063.90	180.53	-609.04	254.04	8.51	6.88	11.81
10,152.00	29.32	356.67	10,091.32	194.93	-610.31	268.48	11.17	9.77	11.61
10,183.00	32.79	359.57	10,117.88	210.90	-610.81	284.40	12.19	11.19	9.35
10,215.00	36.31	0.28	10,144.23	229.05	-610.83	302.41	11.07	11.00	2.22
10,247.00	40.62	0.36	10,169.28	248.95	-610.72	322.14	13.47	13.47	0.25
10,279.00	45.19	0.01	10,192.71	270.73	-610.65	343.75	14.30	14.28	-1.09
10,311.00	49.49	359.75	10,214.39	294.25	-610.70	367.10	13.45	13.44	-0.81
10,342.00	53.67	359.22	10,233.65	318.53	-610.92	391.23	13.55	13.48	-1.71
10,373.00	57.71	358.25	10,251.12	344.13	-611.49	416.70	13.29	13.03	-3.13
10,404.00	61.41	357.90	10,266.83	370.84	-612.39	443.31	11.98	11.94	-1.13
10,436.00	66.29	357.82	10,280.92	399.53	-613.46	471.92	15.25	15.25	-0.25
10,468.00	71.12	358.34	10,292.54	429.32	-614.46	501.61	15.17	15.09	1.63
10,499.00	75.34	359.22	10,301.48	458.99	-615.09	531.13	13.88	13.61	2.84
10,530.00	80.04	0.01	10,308.09	489.27	-615.29	561.20	15.36	15.16	2.55
10,555.00	83.78	0.54	10,311.61	514.01	-615.17	585.74	15.11	14.96	2.12
10,608.00	90.37	1.33	10,314.31	566.91	-614.31	638.13	12.52	12.43	1.49
10,685.10	90.34	0.90	10,313.84	644.00	-612.81	714.45	0.56	-0.04	-0.56
H Fed Com A #10H FTP									
10,685.89	90.34	0.90	10,313.83	644.78	-612.80	715.23	0.56	-0.04	-0.56
Hardline Crossing @ 10685.89' MD / 715.23' VS									
10,703.00	90.33	0.80	10,313.73	661.89	-612.54	732.17	0.56	-0.04	-0.56
10,798.00	90.07	0.89	10,313.40	756.88	-611.14	826.27	0.29	-0.27	0.09
10,892.00	89.76	1.15	10,313.54	850.86	-609.47	919.34	0.43	-0.33	0.28
10,986.00	90.90	0.28	10,313.00	944.85	-608.30	1,012.47	1.53	1.21	-0.93



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Local Co-ordinate Reference: Well Hamon Fed Com A #10H
 TVD Reference: KB=18 @ 3628.00ft
 MD Reference: KB=18 @ 3628.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,081.00	90.99	359.22	10,311.43	1,039.84	-608.71	1,106.78	1.12	0.09	-1.12
11,176.00	91.65	358.17	10,309.24	1,134.78	-610.87	1,201.28	1.31	0.69	-1.11
11,269.00	91.30	358.17	10,306.85	1,227.71	-613.84	1,293.86	0.38	-0.38	0.00
11,364.00	90.99	358.25	10,304.95	1,322.64	-616.81	1,388.44	0.34	-0.33	0.08
11,459.00	92.53	359.31	10,302.03	1,417.57	-618.83	1,482.90	1.97	1.62	1.12
11,553.00	92.44	359.05	10,297.96	1,511.47	-620.17	1,576.25	0.29	-0.10	-0.28
11,648.00	92.31	359.22	10,294.02	1,606.38	-621.61	1,670.62	0.23	-0.14	0.18
11,743.00	92.22	359.66	10,290.27	1,701.30	-622.54	1,764.93	0.47	-0.09	0.46
11,838.00	92.26	359.31	10,286.55	1,796.22	-623.39	1,859.24	0.37	0.04	-0.37
11,932.00	92.09	358.69	10,282.99	1,890.14	-625.03	1,952.64	0.68	-0.18	-0.66
12,026.00	91.87	359.05	10,279.74	1,984.07	-626.88	2,046.09	0.45	-0.23	0.38
12,121.00	91.16	359.57	10,277.23	2,079.03	-628.02	2,140.46	0.93	-0.75	0.55
12,216.00	90.02	359.75	10,276.25	2,174.02	-628.59	2,234.80	1.21	-1.20	0.19
12,310.00	91.21	0.36	10,275.24	2,268.01	-628.50	2,328.07	1.42	1.27	0.65
12,405.00	91.69	0.89	10,272.84	2,362.97	-627.46	2,422.19	0.75	0.51	0.56
12,499.00	91.12	1.33	10,270.53	2,456.93	-625.64	2,515.21	0.77	-0.61	0.47
12,594.00	91.34	1.42	10,268.49	2,551.88	-623.36	2,609.16	0.25	0.23	0.09
12,689.00	92.00	1.77	10,265.72	2,646.80	-620.72	2,703.03	0.79	0.69	0.37
12,783.00	92.35	1.15	10,262.16	2,740.70	-618.33	2,795.93	0.76	0.37	-0.66
12,877.00	91.30	0.28	10,259.16	2,834.64	-617.15	2,889.01	1.45	-1.12	-0.93
12,972.00	90.42	359.49	10,257.74	2,929.63	-617.34	2,983.30	1.24	-0.93	-0.83
13,066.00	90.77	359.57	10,256.76	3,023.62	-618.12	3,076.68	0.38	0.37	0.09
13,161.00	90.42	359.66	10,255.77	3,118.62	-618.75	3,171.03	0.38	-0.37	0.09
13,256.00	89.49	359.75	10,255.85	3,213.61	-619.24	3,265.36	0.98	-0.98	0.09
13,351.00	88.75	359.92	10,257.31	3,308.60	-619.52	3,359.67	0.80	-0.78	0.18
13,445.00	89.05	358.87	10,259.11	3,402.58	-620.51	3,453.05	1.16	0.32	-1.12
13,540.00	89.49	358.69	10,260.32	3,497.55	-622.53	3,547.55	0.50	0.46	-0.19
13,635.00	88.53	359.05	10,261.96	3,592.51	-624.40	3,642.03	1.08	-1.01	0.38
13,729.00	88.97	358.34	10,264.01	3,686.47	-626.54	3,735.53	0.89	0.47	-0.76
13,823.00	89.58	358.69	10,265.20	3,780.43	-628.98	3,829.08	0.75	0.65	0.37
13,918.00	89.49	358.78	10,265.97	3,875.40	-631.08	3,923.59	0.13	-0.09	0.09
14,012.00	90.77	358.43	10,265.76	3,969.37	-633.37	4,017.12	1.41	1.36	-0.37
14,107.00	90.90	358.69	10,264.38	4,064.33	-635.75	4,111.66	0.31	0.14	0.27
14,200.00	91.12	358.34	10,262.74	4,157.28	-638.16	4,204.20	0.44	0.24	-0.38
14,296.00	89.49	358.25	10,262.23	4,253.24	-641.02	4,299.78	1.70	-1.70	-0.09
14,390.00	90.07	359.31	10,262.59	4,347.21	-643.02	4,393.29	1.29	0.62	1.13
14,485.00	91.25	359.40	10,261.49	4,442.20	-644.09	4,487.69	1.25	1.24	0.09
14,580.00	90.99	359.49	10,259.64	4,537.18	-645.01	4,582.06	0.29	-0.27	0.09
14,674.00	91.12	359.22	10,257.91	4,631.15	-646.07	4,675.45	0.32	0.14	-0.29
14,768.00	90.24	359.40	10,256.79	4,725.14	-647.20	4,768.86	0.96	-0.94	0.19
14,863.00	91.69	358.69	10,255.19	4,820.11	-648.78	4,863.31	1.70	1.53	-0.75
14,958.00	90.15	358.87	10,253.66	4,915.07	-650.80	4,957.80	1.63	-1.62	0.19
15,048.00	90.95	0.10	10,252.80	5,005.06	-651.61	5,047.20	1.63	0.89	1.37



Integrity Directional Services, LLC

Survey Report



Company: Legacy Reserves Operating
Project: Lea County, NM
Site: Hamon Fed Pad
Well: Hamon Fed Com A #10H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Hamon Fed Com A #10H
TVD Reference: KB=18 @ 3628.00ft
MD Reference: KB=18 @ 3628.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,147.00	90.46	0.54	10,251.58	5,104.05	-651.06	5,145.38	0.67	-0.49	0.44
15,241.00	90.37	0.36	10,250.90	5,198.05	-650.32	5,238.57	0.21	-0.10	-0.19
Final MWD Survey									
15,296.00	90.37	0.36	10,250.55	5,253.05	-649.98	5,293.10	0.00	0.00	0.00
Projection to TD - PBHL Hamon Fed Com A #10H									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
196.00	195.99	0.66	-1.39	First MWD Survey
10,685.89	10,313.83	644.78	-612.80	Hardline Crossing @ 10685.89'MD / 715.23'VS
15,241.00	10,250.90	5,198.05	-650.32	Final MWD Survey
15,296.00	10,250.55	5,253.05	-649.98	Projection to TD

Checked By: _____ Approved By: _____ Date: _____