

Regeneration Engery Corporation

Lea County, NM (NAD 27)

Sec 31, T 22 S, R 32 E

E. Livingston 31 Federal 8H

Wellbore #1

Design: Wellbore #1

Standard Survey Report

06 February, 2019



Survey Report



Company:	Regeneration Engery Corporation	Local Co-ordinata Reference:	Well E, Livingston 31 Federal 8H
Project:	Lea County, NM (NAD 27)	TVD Reference:	KB=20' @ 3532.00usft (UNK)
Site:	Sec 31, T 22 S, R 32 E	MD Reference:	KB=20' @ 3532.00usft (UNK)
Well:	E. Livingston 31 Federal 8H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Project	Lea County, NM (NAD 27)		
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 31, T 22 S, R 32 E			
Site Position:	Northing:	488,379.40 usft	Latitude:	32.34114
From:	Easting:	691,808.10 usft	Longitude:	-103.71228
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:
				0.33 "

Well	E. Livingston 31 Federal 8H, ACTIVE			
Well Position	+N/-S	0.00 usft	Northing:	488,379.40 usft
	+E/-W	0.00 usft	Easting:	691,808.10 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:
				3,512.00 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/11/2018	6.87	60.10	48,054

Design Wellbore #1

Audit Notes:

Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	0.79

Survey Program Date: 2/6/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	9,442.00	Phoenix Gyros (Wellbore #1)	MWD	Fixed:v2:standard declination
9,602.00	15,011.00	MWD Surveys (Wellbore #1)	MWD	Fixed:v2:standard declination

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.20	189.49	100.00	-0.17	-0.03	-0.17	0.20	0.20	0.00
200.00	0.39	230.01	200.00	-0.56	-0.32	-0.57	0.27	0.19	40.52
300.00	0.29	1.11	300.00	-0.53	-0.57	-0.54	0.62	-0.10	131.10
400.00	0.19	248.05	400.00	-0.34	-0.72	-0.35	0.40	-0.10	-113.06
500.00	0.08	188.22	500.00	-0.47	-0.89	-0.48	0.16	-0.11	-59.83
600.00	0.44	241.90	600.00	-0.72	-1.24	-0.74	0.40	0.36	53.68
700.00	0.33	112.77	699.99	-1.01	-1.31	-1.03	0.70	-0.11	-129.13
800.00	0.21	123.49	799.99	-1.22	-0.89	-1.24	0.13	-0.12	10.72
900.00	0.66	260.70	899.99	-1.42	-1.31	-1.44	0.83	0.45	137.21

Survey Report



Company: Regeneration Engery Corporation
 Project: Lea County, NM (NAD 27)
 Site: Sec 31, T 22 S, R 32 E
 Well: E. Livingston 31 Federal 8H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well E. Livingston 31 Federal 8H
 TVD Reference: KB=20' @ 3532.00usft (UNK)
 MD Reference: KB=20' @ 3532.00usft (UNK)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1

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)
1,000.00	0.56	168.23	999.99	-1.99	-1.77	-2.01	0.88	-0.10	-92.47
1,100.00	0.74	176.53	1,099.98	-3.11	-1.64	-3.13	0.20	0.18	8.30
1,200.00	0.60	135.34	1,199.98	-4.13	-1.23	-4.15	0.49	-0.14	-41.19
1,300.00	0.57	67.15	1,299.97	-4.31	-0.40	-4.31	0.66	-0.03	-68.19
1,400.00	0.56	56.91	1,399.97	-3.85	0.47	-3.84	0.10	-0.01	-10.24
1,500.00	0.41	114.35	1,499.96	-3.73	1.20	-3.71	0.48	-0.15	57.44
1,600.00	0.34	98.83	1,599.96	-3.92	1.82	-3.90	0.12	-0.07	-15.52
1,700.00	0.42	144.33	1,699.96	-4.27	2.33	-4.23	0.30	0.08	45.50
1,800.00	0.39	214.45	1,799.96	-4.84	2.35	-4.81	0.47	-0.03	70.12
1,900.00	0.59	190.91	1,899.95	-5.63	2.06	-5.60	0.28	0.20	-23.54
2,000.00	0.53	167.39	1,999.95	-6.59	2.06	-6.56	0.24	-0.06	-23.52
2,100.00	0.72	169.44	2,099.94	-7.66	2.28	-7.62	0.19	0.19	2.05
2,200.00	0.62	211.35	2,199.94	-8.74	2.11	-8.71	0.49	-0.10	41.91
2,300.00	0.79	227.88	2,299.93	-9.66	1.32	-9.64	0.26	0.17	16.53
2,400.00	0.83	238.93	2,399.92	-10.50	0.19	-10.49	0.16	0.04	11.05
2,500.00	0.83	137.66	2,499.91	-11.41	0.05	-11.40	1.28	0.00	-101.27
2,600.00	1.02	159.05	2,599.90	-12.77	0.86	-12.76	0.39	0.19	21.39
2,700.00	0.81	180.77	2,699.89	-14.31	1.17	-14.29	0.40	-0.21	21.72
2,800.00	0.85	155.29	2,799.88	-15.69	1.47	-15.67	0.37	0.04	-25.48
2,900.00	0.75	135.17	2,899.87	-16.83	2.24	-16.80	0.30	-0.10	-20.12
3,000.00	0.61	134.36	2,999.86	-17.67	3.08	-17.62	0.14	-0.14	-0.81
3,100.00	0.63	143.74	3,099.86	-18.48	3.79	-18.43	0.10	0.02	9.38
3,200.00	0.70	135.74	3,199.85	-19.36	4.54	-19.30	0.12	0.07	-8.00
3,300.00	0.71	253.70	3,299.84	-19.97	4.37	-19.91	1.21	0.01	117.96
3,400.00	0.85	228.65	3,399.84	-20.64	3.22	-20.59	0.36	0.14	-25.05
3,500.00	0.81	256.42	3,499.83	-21.29	1.98	-21.26	0.40	-0.04	27.77
3,600.00	0.85	191.28	3,599.82	-22.19	1.14	-22.17	0.89	0.04	-65.14
3,700.00	1.49	164.20	3,699.80	-24.16	1.35	-24.14	0.83	0.64	-27.08
3,800.00	2.32	171.43	3,799.74	-27.42	2.01	-27.39	0.86	0.83	7.23
3,900.00	2.41	147.52	3,899.66	-31.19	3.44	-31.14	0.98	0.09	-23.91
4,000.00	2.23	146.27	3,999.58	-34.58	5.65	-34.50	0.19	-0.18	-1.25
4,100.00	2.43	142.81	4,099.49	-37.89	8.01	-37.78	0.24	0.20	-3.46
4,200.00	3.00	134.78	4,199.38	-41.42	11.15	-41.26	0.68	0.57	-8.03
4,300.00	3.07	130.19	4,299.24	-44.99	15.05	-44.78	0.25	0.07	-4.59
4,400.00	2.81	124.80	4,399.11	-48.12	19.11	-47.85	0.38	-0.26	-5.39
4,500.00	2.76	120.12	4,498.99	-50.73	23.21	-50.40	0.23	-0.05	-4.68
4,600.00	2.69	115.58	4,598.88	-52.95	27.41	-52.57	0.23	-0.07	-4.54
4,700.00	1.61	113.32	4,698.81	-54.52	30.81	-54.09	1.08	-1.08	-2.26
4,800.00	1.18	125.86	4,798.78	-55.68	32.94	-55.22	0.52	-0.43	12.54
4,900.00	1.21	125.38	4,898.75	-56.89	34.63	-56.41	0.03	0.03	-0.48
5,000.00	1.16	112.45	4,998.73	-57.89	36.43	-57.38	0.27	-0.05	-12.93
5,100.00	1.39	99.10	5,098.71	-58.47	38.56	-57.93	0.37	0.23	-13.35
5,200.00	1.34	100.38	5,198.68	-58.87	40.91	-58.30	0.06	-0.05	1.28

Survey Report



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Site: Sec 31, T 22 S, R 32 E
Well: E. Livingston 31 Federal 8H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well E. Livingston 31 Federal 8H
TVD Reference: KB=20' @ 3532.00usft (UNK)
MD Reference: KB=20' @ 3532.00usft (UNK)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

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)
5,300.00	1.53	95.71	5,298.65	-59.22	43.39	-58.61	0.22	0.19	-4.67
5,400.00	1.69	103.40	5,398.61	-59.69	46.15	-59.05	0.27	0.16	7.69
5,500.00	1.50	101.83	5,498.57	-60.30	48.87	-59.62	0.19	-0.19	-1.57
5,600.00	1.65	105.03	5,598.53	-60.94	51.54	-60.22	0.17	0.15	3.20
5,700.00	1.75	106.21	5,698.49	-61.74	54.39	-60.98	0.11	0.10	1.18
5,800.00	1.79	104.80	5,798.44	-62.57	57.37	-61.77	0.06	0.04	-1.41
5,900.00	1.75	98.01	5,898.39	-63.18	60.39	-62.34	0.21	-0.04	-6.79
6,000.00	1.65	83.62	5,998.35	-63.23	63.34	-62.35	0.44	-0.10	-14.39
6,100.00	0.80	125.90	6,098.33	-63.48	65.33	-62.57	1.19	-0.85	42.28
6,200.00	0.93	95.80	6,198.32	-63.97	66.71	-63.04	0.47	0.13	-30.10
6,300.00	1.12	63.91	6,298.30	-63.62	68.39	-62.67	0.59	0.19	-31.89
6,400.00	0.26	271.68	6,398.30	-63.19	69.04	-62.23	1.36	-0.86	-152.23
6,500.00	0.14	157.87	6,498.30	-63.29	68.86	-62.34	0.34	-0.12	-113.81
6,600.00	0.20	162.76	6,598.30	-63.57	68.96	-62.61	0.06	0.06	4.89
6,700.00	0.41	145.84	6,698.29	-64.04	69.21	-63.07	0.23	0.21	-16.92
6,800.00	0.83	352.30	6,798.29	-63.61	69.31	-62.65	1.21	0.42	-153.54
6,900.00	0.91	5.74	6,898.28	-62.11	69.30	-61.14	0.22	0.08	13.44
7,000.00	0.87	26.09	6,998.27	-60.63	69.71	-59.67	0.32	-0.04	20.35
7,100.00	0.89	25.37	7,098.26	-59.25	70.38	-58.27	0.02	0.02	-0.72
7,200.00	0.67	29.14	7,198.25	-58.04	70.99	-57.05	0.23	-0.22	3.77
7,300.00	0.36	340.93	7,298.24	-57.23	71.18	-56.24	0.51	-0.31	-48.21
7,400.00	0.68	163.49	7,398.24	-57.50	71.24	-56.51	1.04	0.32	-177.44
7,500.00	0.48	287.82	7,498.24	-57.94	71.01	-56.96	1.03	-0.20	124.33
7,600.00	0.74	280.80	7,598.23	-57.69	69.98	-56.72	0.27	0.26	-7.02
7,700.00	0.57	237.32	7,698.23	-57.84	68.93	-56.88	0.51	-0.17	-43.48
7,800.00	0.25	328.46	7,798.23	-57.93	68.39	-56.97	0.63	-0.32	91.14
7,900.00	0.54	279.47	7,898.22	-57.66	67.81	-56.72	0.42	0.29	-48.99
8,000.00	0.32	223.61	7,998.22	-57.79	67.16	-56.85	0.45	-0.22	-55.86
8,100.00	0.59	192.94	8,098.22	-58.49	66.85	-57.56	0.35	0.27	-30.67
8,200.00	0.73	214.12	8,198.21	-59.52	66.38	-58.60	0.28	0.14	21.18
8,300.00	0.81	207.98	8,298.20	-60.67	65.69	-59.76	0.11	0.08	-6.14
8,400.00	1.15	192.66	8,398.19	-62.27	65.14	-61.37	0.43	0.34	-15.32
8,500.00	0.98	197.15	8,498.17	-64.07	64.66	-63.17	0.19	-0.17	4.49
8,600.00	1.10	237.14	8,598.16	-65.41	63.61	-64.52	0.72	0.12	39.99
8,700.00	0.81	230.69	8,698.14	-66.38	62.25	-65.51	0.31	-0.29	-8.45
8,800.00	1.08	257.24	8,798.13	-67.03	60.79	-66.19	0.51	0.27	26.55
8,900.00	0.64	241.67	8,898.12	-67.51	59.38	-66.68	0.49	-0.44	-15.57
9,000.00	0.47	274.11	8,998.11	-67.74	58.47	-66.93	0.35	-0.17	32.44
9,100.00	0.66	343.26	9,098.11	-67.16	57.90	-66.35	0.66	0.19	69.15
9,200.00	1.37	101.42	9,198.10	-68.85	58.91	-66.03	1.78	0.71	118.16
9,300.00	2.11	104.85	9,298.05	-87.55	61.86	-66.69	0.75	0.74	3.43
9,400.00	1.02	74.45	9,398.01	-67.79	64.49	-66.89	1.33	-1.09	-30.40
9,442.00	1.14	82.94	9,440.01	-67.64	65.27	-66.73	0.48	0.29	20.21

Survey Report



Company: Regeneration Energy Corporation
Project: Lea County, NM (NAD 27)
Site: Sec 31, T 22 S, R 32 E
Well: E. Livingston 31 Federal 8H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well E. Livingston 31 Federal 8H
TVD Reference: KB=20' @ 3532.00usft (UNK)
MD Reference: KB=20' @ 3532.00usft (UNK)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

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)
9,602.00	1.05	58.83	9,599.98	-66.68	68.10	-65.73	0.29	-0.06	-15.07
First MWD Survey @ 9602'MD									
9,729.00	1.36	25.08	9,726.95	-64.71	69.74	-63.74	0.60	0.24	-26.57
9,792.00	6.11	356.26	9,789.80	-60.69	69.84	-59.72	7.88	7.54	-45.75
9,839.00	11.16	356.43	9,836.26	-53.65	69.39	-52.69	10.74	10.74	0.36
9,888.00	15.16	354.41	9,883.96	-42.54	68.47	-41.59	8.22	8.16	-4.12
9,935.00	19.91	357.58	9,928.76	-28.41	67.53	-27.48	10.31	10.11	6.74
9,983.00	23.82	356.26	9,973.30	-10.57	66.55	-9.65	8.21	8.15	-2.75
10,030.00	27.82	356.70	10,015.60	9.86	65.30	10.76	8.52	8.51	0.94
10,079.00	30.20	358.45	10,058.45	33.60	64.31	34.48	5.16	4.86	3.57
10,110.00	32.66	359.68	10,084.90	49.76	64.05	50.64	8.20	7.94	3.97
10,142.00	35.08	0.92	10,111.47	67.59	64.15	68.47	7.86	7.56	3.88
10,174.00	38.33	2.41	10,137.12	86.70	64.72	87.59	10.53	10.16	4.66
10,206.00	42.46	4.43	10,161.49	107.40	65.97	108.30	13.54	12.91	6.31
10,237.00	46.65	5.57	10,183.57	129.06	67.87	129.98	13.76	13.52	3.68
10,252.72	48.55	5.88	10,194.17	140.61	69.03	141.55	12.15	12.06	2.00
South Hardline Crossing @ 10252.72'MD									
10,269.00	50.51	6.19	10,204.74	152.92	70.34	153.88	12.15	12.07	1.88
10,301.00	54.81	7.24	10,224.15	178.18	73.32	179.18	13.69	13.44	3.28
10,332.00	59.12	7.95	10,241.04	203.94	76.75	204.98	14.04	13.90	2.29
10,364.00	63.43	8.39	10,256.42	231.71	80.74	232.80	13.52	13.47	1.38
10,396.00	67.78	8.65	10,269.63	260.52	85.06	261.67	13.61	13.59	0.81
10,427.00	72.22	8.21	10,280.23	289.33	89.33	290.53	14.38	14.32	-1.42
10,459.00	76.48	7.59	10,288.86	319.84	93.56	321.10	13.44	13.31	-1.94
10,490.00	80.92	6.19	10,294.93	350.01	97.20	351.32	14.99	14.32	-4.52
10,520.00	85.14	4.87	10,298.57	379.65	100.07	380.99	14.73	14.07	-4.40
10,555.00	88.90	3.29	10,300.39	414.50	102.56	415.88	11.65	10.74	-4.51
10,651.00	90.68	0.30	10,300.75	510.44	105.56	511.85	3.82	1.85	-3.11
10,746.00	89.93	0.39	10,300.24	605.44	106.14	606.85	0.80	-0.79	0.09
10,841.00	90.64	0.12	10,299.77	700.43	106.56	701.84	0.80	0.75	-0.28
10,935.00	90.29	359.07	10,299.00	794.43	105.89	795.81	1.18	-0.37	-1.12
11,030.00	89.98	358.81	10,298.78	889.41	104.14	890.76	0.43	-0.33	-0.27
11,126.00	88.84	358.72	10,299.77	985.38	102.07	986.70	1.19	-1.19	-0.09
11,221.00	89.05	358.98	10,301.52	1,080.35	100.16	1,081.63	0.35	0.22	0.27
11,316.00	89.67	359.07	10,302.58	1,175.33	98.54	1,176.58	0.66	0.65	0.09
11,411.00	88.04	358.45	10,304.48	1,270.28	96.49	1,271.49	1.84	-1.72	-0.65
11,506.00	88.70	358.63	10,307.18	1,365.21	94.07	1,366.38	0.72	0.69	0.19
11,601.00	89.14	358.72	10,308.97	1,460.17	91.87	1,461.30	0.47	0.46	0.09
11,696.00	89.80	358.72	10,309.85	1,555.14	89.75	1,556.23	0.69	0.69	0.00
11,792.00	90.37	358.63	10,309.71	1,651.11	87.53	1,652.17	0.60	0.59	-0.09
11,887.00	89.05	358.37	10,310.19	1,746.08	85.05	1,747.09	1.42	-1.39	-0.27
11,982.00	89.85	358.45	10,311.10	1,841.04	82.41	1,842.00	0.85	0.84	0.08
12,077.00	90.11	358.81	10,311.13	1,936.01	80.14	1,936.93	0.47	0.27	0.38
12,172.00	90.68	358.81	10,310.48	2,030.99	78.17	2,031.87	0.60	0.60	0.00

Survey Report



Company:	Regeneration Engery Corporation	Local Co-ordinate Reference:	Well E. Livingston 31 Federal 8H
Project:	Lea County, NM (NAD 27)	TVD Reference:	KB=20' @ 3532.00usft (UNK)
Site:	Sec 31, T 22 S, R 32 E	MD Reference:	KB=20' @ 3532.00usft (UNK)
Well:	E. Livingston 31 Federal 8H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

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)
12,268.00	89.19	358.72	10,310.59	2,126.96	76.10	2,127.81	1.55	-1.55	-0.09
12,363.00	89.89	358.98	10,311.35	2,221.94	74.19	2,222.75	0.79	0.74	0.27
12,458.00	90.64	359.33	10,310.91	2,316.93	72.79	2,317.71	0.87	0.79	0.37
12,553.00	89.71	359.07	10,310.62	2,411.92	71.46	2,412.67	1.02	-0.98	-0.27
12,648.00	90.48	359.33	10,310.48	2,506.91	70.14	2,507.63	0.86	0.81	0.27
12,744.00	90.81	359.51	10,309.38	2,602.89	69.16	2,603.60	0.39	0.34	0.19
12,839.00	91.25	359.68	10,307.67	2,697.88	68.49	2,698.56	0.50	0.46	0.18
12,934.00	91.78	359.60	10,305.16	2,792.84	67.90	2,793.51	0.56	0.56	-0.08
13,029.00	90.46	359.77	10,303.31	2,887.82	67.37	2,888.47	1.40	-1.39	0.18
13,125.00	91.12	359.77	10,301.98	2,983.81	66.99	2,984.45	0.69	0.69	0.00
13,219.00	91.74	359.95	10,299.64	3,077.78	66.76	3,078.41	0.69	0.66	0.19
13,314.00	90.46	359.77	10,297.81	3,172.76	66.53	3,173.37	1.36	-1.35	-0.19
13,410.00	89.93	359.60	10,297.49	3,268.76	66.00	3,269.36	0.58	-0.55	-0.18
13,505.00	90.64	359.68	10,297.01	3,363.75	65.40	3,364.33	0.75	0.75	0.08
13,600.00	90.95	359.60	10,295.69	3,458.74	64.81	3,459.31	0.34	0.33	-0.08
13,694.00	89.58	359.77	10,295.26	3,552.74	64.29	3,553.29	1.47	-1.46	0.18
13,790.00	90.29	359.86	10,295.37	3,648.74	63.98	3,649.27	0.75	0.74	0.09
13,885.00	90.81	359.86	10,294.46	3,743.73	63.75	3,744.25	0.55	0.55	0.00
13,980.00	91.60	359.95	10,292.46	3,838.71	63.59	3,839.22	0.84	0.83	0.09
14,075.00	90.64	359.33	10,290.60	3,933.69	62.99	3,934.18	1.20	-1.01	-0.65
14,171.00	91.12	359.25	10,289.13	4,029.67	61.80	4,030.14	0.51	0.50	-0.08
14,266.00	90.07	359.51	10,288.14	4,124.66	60.77	4,125.10	1.14	-1.11	0.27
14,361.00	90.59	359.25	10,287.59	4,219.65	59.75	4,220.07	0.61	0.56	-0.27
14,456.00	90.99	359.42	10,286.28	4,314.63	58.64	4,315.03	0.46	0.42	0.18
14,552.00	91.56	359.60	10,284.15	4,410.60	57.82	4,410.98	0.62	0.59	0.19
14,647.00	90.68	359.68	10,282.29	4,505.58	57.23	4,505.94	0.93	-0.93	0.08
14,741.00	90.95	359.95	10,280.95	4,599.57	56.92	4,599.92	0.41	0.29	0.29
14,836.00	91.25	359.42	10,279.13	4,694.55	56.40	4,694.89	0.64	0.32	-0.56
14,908.54	91.65	359.42	10,277.29	4,767.07	55.67	4,767.38	0.56	0.56	0.00
North Hardline Crossing @ 14908.54'MD									
14,931.00	91.78	359.42	10,276.62	4,789.52	55.44	4,789.82	0.56	0.56	0.00
14,961.00	92.09	359.42	10,275.61	4,819.50	55.14	4,819.80	1.03	1.03	0.00
Final MWD Survey @ 14961'MD									
15,011.00	92.09	359.42	10,273.78	4,869.46	54.63	4,869.75	0.00	0.00	0.00
Projection to TD @ 15011'MD									

Survey Report



Company:	Regeneration Engery Corporation	Local Co-ordinate Reference:	Well E. Livingston 31 Federal 8H
Project:	Lea County, NM (NAD 27)	TVD Reference:	KB=20' @ 3532.00usft (UNK)
Site:	Sec 31, T 22 S, R 32 E	MD Reference:	KB=20' @ 3532.00usft (UNK)
Well:	E. Livingston 31 Federal 8H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,602.00	9,599.98	-66.68	68.10	First MWD Survey @ 9602'MD
10,252.72	10,194.17	140.61	69.03	South Hardline Crossing @ 10252.72'MD
14,908.54	10,277.29	4,787.07	55.67	North Hardline Crossing @ 14908.54'MD
14,961.00	10,275.61	4,819.50	55.14	Final MWD Survey @ 14961'MD
15,011.00	10,273.78	4,869.46	54.63	Projection to TD @ 15011'MD

Checked By: <u>Josh Shoemaker</u>	Approved By: <u><i>J. Shoemaker</i></u>	Date: <u>03062019</u>
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