DrilTech, LLC

MWD Survey Report

Job No: DM-2019-077-SEDT-NM

Operator:	**Steward Energy II, LLC**
Well Name:	**Salamanca State 1H**
Location:	**Lea County, NM**
Rig:	**Norton Rig #6**
Directional Drilling Co:	**DrilTech, LLC**
Well API #:	**30-025-45933**
Tie Into:	**Surface**
Tie-In Date:	**6/1/19**
Date Completed:	**6/10/19**

Reference Coordinates:	LAT:	33	° 9	' 21.7109	"	N
	LON:	103	° 4	' 38.1277	"	W
Reference Grid Coordinates:	X:	925754.00 (ft)				
	Y:	786610.00 (ft)				

Reference Datum: **NAD 83**
Zone: **New Mexico East**
Coordinate System: **State Plane - Transverse Mercator Projection**

Survey Vertical Reference:	17.00 (ft)	Rotary Table to Ground Level
Elevation:	3796.00 (ft)	Ground Level to Mean Sea Level
Vertical Section Plane:	359.05 (deg)	
North Alignment:	Grid North	

Magnetic Data	Section 1	Section 2	Section 3	Section 4
Magnetic Declination (deg)	6.57			
Grid (deg)	0.69			
TOTAL CORRECTION (deg)	5.88			
Depth Start (MD Ft)	0.00			
Depth End (MD Ft)	10136.00			

REMARKS:

Company:	Steward Energy II, LLC	Job Number:	DM-2019-077-SEDT-NM	All Azimuths Corrected To:	Grid North
Well:	Salamanca State 1H	Vertical Section Plane:	359.05		
Location:	Lea County, NM	Well API Number:	30-025-45933		
Rig:	Norton Rig #8	Tie Into:	Surface	Calculation Method:	Minimum Curvature

Survey #	Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates N(+) / S(-) (ft)	Coordinates E(+)/W(-) (ft)	Closure Distance (ft)	Closure Angle (deg)	Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')	Special Notes
Tie In	Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	MWD	130.00	0.09	341.09	130	130.00	0.10	0.10	-0.03	0.10	-18.91	0.07	0.07	262.38	
2	MWD	222.00	0.44	142.99	92	222.00	-0.12	-0.12	0.16	0.20	126.88	0.57	0.38	-215.33	
3	MWD	315.00	0.09	110.03	93	315.00	-0.43	-0.43	0.44	0.61	134.18	0.40	-0.38	-35.44	
4	MWD	407.00	0.35	93.95	92	407.00	-0.48	-0.47	0.79	0.92	120.89	0.29	0.28	-17.48	
5	MWD	499.00	0.79	141.67	92	498.99	-1.01	-0.99	1.46	1.76	124.07	0.67	0.48	51.87	
6	MWD	592.00	1.76	168.74	93	591.97	-2.93	-2.89	2.14	3.60	143.52	1.20	1.04	29.11	
7	MWD	686.00	3.25	176.39	94	685.88	-7.01	-6.97	2.59	7.43	159.62	1.62	1.59	8.14	
8	MWD	780.00	4.57	177.27	94	779.66	-13.41	-13.37	2.93	13.69	167.62	1.41	1.40	0.94	
9	MWD	874.00	5.19	176.50	94	873.32	-21.41	-21.36	3.22	21.60	171.42	0.67	0.66	1.31	
10	MWD	965.00	5.45	178.67	91	963.92	-29.85	-29.79	3.43	29.99	173.43	0.29	0.29	0.19	
11	MWD	1060.00	5.89	177.88	95	1058.46	-39.23	-39.17	3.72	39.35	174.58	0.47	0.46	-0.83	
12	MWD	1153.00	5.72	175.25	93	1150.98	-48.63	-48.56	4.28	48.75	174.97	0.34	-0.18	-2.83	
13	MWD	1249.00	5.72	176.21	96	1246.50	-58.18	-58.10	4.99	58.32	175.09	0.10	0.00	1.00	
14	MWD	1344.00	4.92	177.88	95	1341.09	-66.98	-66.90	5.45	67.12	175.34	0.86	-0.84	1.76	
15	MWD	1439.00	5.10	180.34	95	1435.73	-75.27	-75.19	5.58	75.40	175.76	0.29	0.19	2.59	
16	MWD	1534.00	5.19	181.22	95	1530.35	-83.79	-83.71	5.46	83.89	176.27	0.13	0.09	0.93	
17	MWD	1629.00	5.10	181.92	95	1624.97	-92.30	-92.23	5.23	92.37	176.75	0.12	-0.09	0.74	
18	MWD	1723.00	5.10	182.54	94	1718.59	-100.64	-100.57	4.90	100.69	177.21	0.06	0.00	0.66	
19	MWD	1817.00	5.01	180.34	94	1812.23	-108.92	-108.85	4.69	108.95	177.53	0.23	-0.10	-2.34	
20	MWD	1911.00	5.10	180.26	94	1905.86	-117.20	-117.14	4.65	117.23	177.73	0.10	0.10	-0.09	
21	MWD	2006.00	4.75	173.14	95	2000.51	-125.33	-125.26	5.10	125.37	177.67	0.74	-0.37	-7.49	
22	MWD	2100.00	4.92	169.97	94	2094.18	-133.18	-133.10	6.27	133.24	177.30	0.34	0.18	-3.37	
23	MWD	2195.00	5.28	173.31	95	2188.80	-141.55	-141.45	7.49	141.65	176.97	0.49	0.38	3.52	
24	MWD	2289.00	5.80	172.08	94	2282.36	-150.57	-150.45	8.65	150.70	176.71	0.57	0.55	-1.31	
25	MWD	2380.00	5.72	177.35	91	2372.90	-159.67	-159.53	9.49	159.82	176.60	0.59	-0.09	5.79	
26	MWD	2493.00	5.72	179.02	113	2485.34	-170.93	-170.79	9.85	171.07	176.70	0.15	0.00	1.48	
27	MWD	2587.00	4.66	182.01	94	2578.95	-179.43	-179.29	9.79	179.56	176.87	1.16	-1.13	3.18	
28	MWD	2681.00	3.78	180.34	94	2672.70	-186.34	-186.20	9.64	186.45	177.04	0.95	-0.94	-1.78	
29	MWD	2776.00	2.81	177.79	95	2767.54	-191.80	-191.66	9.71	191.91	177.10	1.03	-1.02	-2.68	
30	MWD	2871.00	2.46	179.73	95	2862.44	-196.16	-196.03	9.81	196.27	177.14	0.38	-0.37	2.04	
31	MWD	2966.00	1.58	195.11	95	2957.38	-199.46	-199.33	9.48	199.56	177.28	1.08	-0.93	16.19	
32	MWD	3059.00	0.35	95.09	93	3050.37	-200.72	-200.59	9.43	200.82	177.31	1.80	-1.32	-107.55	
33	MWD	3153.00	0.35	18.62	94	3144.37	-200.48	-200.35	9.80	200.59	177.20	0.46	0.00	-81.35	
34	MWD	3248.00	0.44	337.32	95	3239.36	-199.87	-199.74	9.76	199.97	177.20	0.31	0.09	335.47	
35	MWD	3342.00	0.70	295.04	94	3333.36	-199.28	-199.16	9.10	199.37	177.38	0.51	0.28	-44.98	
36	MWD	3437.00	0.70	298.38	95	3428.35	-198.75	-198.64	8.06	198.80	177.68	0.04	0.00	3.52	
37	MWD	3531.00	1.06	283.44	94	3522.34	-198.25	-198.16	6.71	198.28	178.06	0.45	0.38	-15.89	
38	MWD	3626.00	0.62	11.15	95	3617.33	-197.53	-197.46	5.95	197.55	178.27	1.27	-0.46	-286.62	
39	MWD	3720.00	0.88	45.34	94	3711.33	-196.53	-196.45	6.57	196.56	178.09	0.54	0.28	36.37	
40	MWD	3814.00	0.44	139.21	94	3805.32	-196.31	-196.21	7.32	196.35	177.86	1.07	-0.47	99.86	
41	MWD	3908.00	0.53	100.89	94	3899.32	-196.68	-196.57	7.98	196.73	177.68	0.35	0.10	-40.77	
42	MWD	4002.00	0.62	92.28	94	3993.31	-196.79	-196.67	8.91	196.87	177.40	0.13	0.10	-9.16	
43	MWD	4096.00	0.62	95.00	94	4087.31	-196.87	-196.74	9.93	196.99	177.11	0.03	0.00	2.89	
44	MWD	4190.00	0.53	85.68	94	4181.30	-196.90	-196.75	10.87	197.05	176.84	0.14	-0.10	-9.91	
45	MWD	4285.00	0.70	60.28	95	4276.30	-196.60	-196.43	11.81	196.78	176.56	0.33	0.18	-26.74	
46	MWD	4380.00	0.88	45.69	95	4371.29	-195.82	-195.63	12.84	196.05	176.25	0.28	0.19	-15.36	
47	MWD	4474.00	1.06	49.91	94	4465.28	-194.77	-194.57	14.02	195.07	175.88	0.21	0.19	4.49	
48	MWD	4505.00	1.41	24.34	31	4496.27	-194.25	-194.03	14.40	194.57	175.76	2.08	1.13	-82.48	
49	MWD	4537.00	3.69	5.97	32	4528.24	-192.87	-192.65	14.66	193.21	175.65	7.48	7.13	-57.41	

Company:	Steward Energy II, LLC	Job Number:	DM-2019-077-SEDT-NM	All Azimuths Corrected To:	**Grid North**
Well:	Salamanca State 1H	Vertical Section Plane:	359.05		
Location:	Lea County, NM	Well API Number:	30-025-45933		
Rig:	Norton Rig #6	Tie Into:	Surface	Calculation Method:	Minimum Curvature

Survey #	Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates N(+) / S(-) (ft)	Coordinates E(+)/W(-) (ft)	Closure Distance (ft)	Closure Angle (deg)	Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')	Special Notes
Tie In	Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	MWD	130.00	0.09	341.09	130	130.00	0.10	0.10	-0.03	0.10	-18.91	0.07	0.07	262.38	
2	MWD	222.00	0.44	142.99	92	222.00	-0.12	-0.12	0.16	0.20	126.88	0.57	0.38	-215.33	
3	MWD	315.00	0.09	110.03	93	315.00	-0.43	-0.43	0.44	0.61	134.18	0.40	-0.38	-35.44	
4	MWD	407.00	0.35	93.95	92	407.00	-0.48	-0.47	0.79	0.92	120.89	0.29	0.28	-17.48	
5	MWD	499.00	0.79	141.67	92	498.99	-1.01	-0.99	1.46	1.76	124.07	0.67	0.48	51.87	
6	MWD	592.00	1.76	168.74	93	591.97	-2.93	-2.89	2.14	3.60	143.52	1.20	1.04	29.11	
7	MWD	686.00	3.25	176.39	94	685.88	-7.01	-6.97	2.59	7.43	159.62	1.62	1.59	8.14	
8	MWD	780.00	4.57	177.27	94	779.66	-13.41	-13.37	2.93	13.69	167.62	1.41	1.40	0.94	
9	MWD	874.00	5.19	178.50	94	873.32	-21.41	-21.36	3.22	21.60	171.42	0.67	0.66	1.31	
10	MWD	965.00	5.45	178.67	91	963.92	-29.85	-29.79	3.43	29.99	173.43	0.29	0.29	0.19	
11	MWD	1060.00	5.89	177.88	95	1058.46	-39.23	-39.17	3.72	39.35	174.58	0.47	0.46	-0.83	
12	MWD	1153.00	5.72	175.25	93	1150.98	-48.63	-48.56	4.28	48.75	174.97	0.34	-0.18	-2.83	
13	MWD	1249.00	5.72	176.21	96	1246.50	-58.18	-58.10	4.99	58.32	175.09	0.10	0.00	1.00	
14	MWD	1344.00	4.92	177.88	95	1341.09	-66.98	-66.90	5.45	67.12	175.34	0.86	-0.84	1.76	
15	MWD	1439.00	5.10	180.34	95	1435.73	-75.27	-75.19	5.58	75.40	175.76	0.29	0.19	2.59	
16	MWD	1534.00	5.19	181.22	95	1530.35	-83.79	-83.71	5.46	83.89	176.27	0.13	0.09	0.93	
17	MWD	1629.00	5.10	181.92	95	1624.97	-92.30	-92.23	5.23	92.37	176.75	0.12	-0.09	0.74	
18	MWD	1723.00	5.10	182.54	94	1718.59	-100.64	-100.57	4.90	100.69	177.21	0.06	0.00	0.66	
19	MWD	1817.00	5.01	180.34	94	1812.23	-108.92	-108.85	4.69	108.95	177.53	0.23	-0.10	-2.34	
20	MWD	1911.00	5.10	180.26	94	1905.86	-117.20	-117.14	4.65	117.23	177.73	0.10	0.10	-0.09	
21	MWD	2006.00	4.75	173.14	95	2000.51	-125.33	-125.26	5.10	125.37	177.67	0.74	-0.37	-7.49	
22	MWD	2100.00	4.92	169.97	94	2094.18	-133.18	-133.10	6.27	133.24	177.30	0.34	0.18	-3.37	
23	MWD	2195.00	5.28	173.31	95	2188.80	-141.55	-141.45	7.49	141.65	176.97	0.49	0.38	3.52	
24	MWD	2289.00	5.80	172.08	94	2282.36	-150.57	-150.45	8.65	150.70	176.71	0.57	0.55	-1.31	
25	MWD	2380.00	5.72	177.35	91	2372.90	-159.67	-159.53	9.49	159.82	176.60	0.59	-0.09	5.79	
26	MWD	2493.00	5.72	179.02	113	2485.34	-170.93	-170.79	9.85	171.07	176.70	0.15	0.00	1.48	
27	MWD	2587.00	4.66	182.01	94	2578.95	-179.43	-179.29	9.79	179.56	176.87	1.16	-1.13	3.18	
28	MWD	2681.00	3.78	180.34	94	2672.70	-186.34	-186.20	9.64	186.45	177.04	0.95	-0.94	-1.78	
29	MWD	2776.00	2.81	177.79	95	2767.54	-191.80	-191.66	9.71	191.91	177.10	1.03	-1.02	-2.68	
30	MWD	2871.00	2.46	179.73	95	2862.44	-196.16	-196.03	9.81	196.27	177.14	0.38	-0.37	2.04	
31	MWD	2966.00	1.58	195.11	95	2957.38	-199.46	-199.33	9.48	199.56	177.28	1.08	-0.93	16.19	
32	MWD	3059.00	0.35	95.09	93	3050.37	-200.72	-200.59	9.43	200.82	177.31	1.80	-1.32	-107.55	
33	MWD	3153.00	0.35	18.62	94	3144.37	-200.48	-200.35	9.80	200.59	177.20	0.46	0.00	-81.35	
34	MWD	3248.00	0.44	337.32	95	3239.36	-199.87	-199.74	9.76	199.97	177.20	0.31	0.09	335.47	
35	MWD	3342.00	0.70	295.04	94	3333.36	-199.28	-199.16	9.10	199.37	177.38	0.51	0.28	-44.98	
36	MWD	3437.00	0.70	298.38	95	3428.35	-198.75	-198.64	8.06	198.80	177.68	0.04	0.00	3.52	
37	MWD	3531.00	1.06	283.44	94	3522.34	-198.25	-198.16	6.71	198.28	178.06	0.45	0.38	-15.89	
38	MWD	3626.00	0.62	11.15	95	3617.33	-197.53	-197.46	5.95	197.55	178.27	1.27	-0.46	-286.62	
39	MWD	3720.00	0.88	45.34	94	3711.33	-196.53	-196.45	6.57	196.56	178.09	0.54	0.28	36.37	
40	MWD	3814.00	0.44	139.21	94	3805.32	-196.31	-196.21	7.32	196.35	177.86	1.07	-0.47	99.86	
41	MWD	3908.00	0.53	100.89	94	3899.32	-196.68	-196.57	7.98	196.73	177.68	0.35	0.10	-40.77	
42	MWD	4002.00	0.62	92.28	94	3993.31	-196.79	-196.67	8.91	196.87	177.40	0.13	0.10	-9.16	

		Company:	Steward Energy II, LLC			Job Number:	DM-2019-077-SEDT-NM		All Azimuths							
		Well:	Salamanca State 1H			Vertical Section Plane:	359.05		Corrected To:		Grid North					
		Location:	Lea County, NM			Well API Number:	30-025-45933									
		Rig:	Norton Rig #6			Tie Into:	Surface		Calculation Method:		Minimum Curvature					
Survey #	Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates N(+) / S(-) (ft)	Coordinates E(+)/W(-) (ft)	Closure Distance (ft)	Closure Angle (deg)	Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')	Special Notes
43	MWD	4096.00	0.62	95.00	94	4087.31	-196.87	-196.74	9.93	196.99	177.11	0.03	0.00	2.89	
44	MWD	4190.00	0.53	85.68	94	4181.30	-196.90	-196.75	10.87	197.05	176.84	0.14	-0.10	-9.91	
45	MWD	4285.00	0.70	60.28	95	4276.30	-196.60	-196.43	11.81	196.78	176.56	0.33	0.18	-26.74	
46	MWD	4380.00	0.88	45.69	95	4371.29	-195.82	-195.63	12.84	196.05	176.25	0.28	0.19	-15.36	
47	MWD	4474.00	1.06	49.91	94	4465.28	-194.77	-194.57	14.02	195.07	175.88	0.21	0.19	4.49	
48	MWD	4505.00	1.41	24.34	31	4496.27	-194.25	-194.03	14.40	194.57	175.76	2.08	1.13	-82.48	
49	MWD	4537.00	3.69	5.97	32	4528.24	-192.87	-192.65	14.66	193.21	175.65	7.48	7.13	-57.41	
50	MWD	4568.00	6.51	7.29	31	4559.11	-190.14	-189.92	14.99	190.51	175.49	9.10	9.10	4.26	
51	MWD	4600.00	8.97	4.12	32	4590.82	-185.86	-185.63	15.40	186.27	175.26	7.80	7.69	-9.91	
52	MWD	4631.00	11.52	2.45	31	4621.32	-180.36	-180.12	15.71	180.81	175.02	8.28	8.23	-5.39	
53	MWD	4663.00	14.42	0.78	32	4652.50	-173.18	-172.95	15.90	173.67	174.75	9.14	9.06	-5.22	
54	MWD	4694.00	17.06	359.64	31	4682.34	-164.78	-164.54	15.92	165.31	174.47	8.57	8.52	1157.61	
55	MWD	4726.00	19.17	358.94	32	4712.75	-154.83	-154.59	15.79	155.39	174.17	6.63	6.59	-2.19	
56	MWD	4758.00	21.37	358.23	32	4742.76	-143.74	-143.51	15.52	144.34	173.83	6.92	6.88	-2.22	
57	MWD	4789.00	23.92	357.44	31	4771.37	-131.81	-131.58	15.06	132.44	173.47	8.28	8.23	-2.55	
58	MWD	4820.00	26.12	357.62	31	4799.46	-118.71	-118.48	14.50	119.37	173.02	7.10	7.10	0.58	
59	MWD	4852.00	27.96	357.62	32	4827.96	-104.16	-103.95	13.89	104.87	172.39	5.75	5.75	0.00	
60	MWD	4883.00	29.99	357.79	31	4855.08	-89.15	-88.94	13.29	89.93	171.50	6.55	6.55	0.55	
61	MWD	4914.00	31.92	358.15	31	4881.66	-73.21	-73.01	12.73	74.11	170.11	6.25	6.23	1.16	
62	MWD	4946.00	33.85	358.32	32	4908.53	-55.84	-55.64	12.20	56.97	167.64	6.04	6.03	0.53	
63	MWD	4977.00	35.96	357.88	31	4933.96	-38.10	-37.92	11.61	39.65	162.98	6.85	6.81	-1.42	
64	MWD	5008.00	37.99	357.09	31	4958.72	-19.47	-19.29	10.78	22.10	150.79	6.73	6.55	-2.55	
65	MWD	5040.00	39.83	356.39	32	4983.62	0.62	0.77	9.64	9.67	85.40	5.91	5.75	-2.19	
66	MWD	5071.00	42.65	355.68	31	5006.93	21.02	21.16	8.22	22.70	21.24	9.22	9.10	-2.29	
67	MWD	5103.00	45.02	355.77	32	5030.01	43.14	43.26	6.57	43.75	8.64	7.41	7.41	0.28	
68	MWD	5134.00	47.75	356.30	31	5051.39	65.55	65.65	5.02	65.84	4.37	8.89	8.81	1.71	
69	MWD	5166.00	50.91	356.39	32	5072.24	89.80	89.87	3.48	89.93	2.21	9.88	9.87	0.28	
70	MWD	5198.00	54.08	356.39	32	5091.72	115.15	115.20	1.88	115.21	0.93	9.91	9.91	0.00	
71	MWD	5229.00	57.07	356.83	31	5109.25	140.70	140.72	0.37	140.72	0.15	9.72	9.65	1.42	
72	MWD	5260.00	59.71	357.97	31	5125.49	167.08	167.09	-0.83	167.09	-0.28	9.07	8.52	3.68	
73	MWD	5292.00	61.29	359.20	32	5141.25	194.93	194.93	-1.51	194.94	-0.44	5.96	4.94	3.84	Start Tangent @ 5277'
74	MWD	5323.00	61.55	359.46	31	5156.08	222.15	222.15	-1.83	222.16	-0.47	1.12	0.84	0.84	
75	MWD	5355.00	61.82	359.38	32	5171.26	250.32	250.32	-2.12	250.33	-0.48	0.87	0.84	-0.25	
76	MWD	5387.00	62.08	359.02	32	5186.31	278.56	278.56	-2.51	278.57	-0.52	1.28	0.81	-1.13	
77	MWD	5419.00	62.26	359.29	32	5201.25	306.86	306.86	-2.93	306.87	-0.55	0.93	0.56	0.84	
78	MWD	5450.00	62.34	358.85	31	5215.66	334.31	334.30	-3.37	334.32	-0.58	1.28	0.26	-1.42	
79	MWD	5481.00	62.43	358.76	31	5230.03	361.78	361.76	-3.95	361.78	-0.62	0.39	0.29	-0.29	
80	MWD	5512.00	62.70	358.50	31	5244.31	389.29	389.27	-4.60	389.30	-0.68	1.15	0.87	-0.84	
81	MWD	5543.00	62.78	358.32	31	5258.51	416.85	416.82	-5.37	416.85	-0.74	0.58	0.26	-0.58	End Tangent @ 5565'
82	MWD	5575.00	64.37	358.23	32	5272.75	445.50	445.46	-6.23	445.50	-0.80	4.98	4.97	-0.28	
83	MWD	5607.00	67.36	358.15	32	5285.83	474.70	474.64	-7.15	474.70	-0.86	9.35	9.34	-0.25	
84	MWD	5637.00	70.43	358.41	30	5296.63	502.68	502.61	-7.99	502.68	-0.91	10.27	10.23	0.87	
85	MWD	5669.00	73.78	358.76	32	5306.46	533.12	533.05	-8.74	533.12	-0.94	10.52	10.47	1.09	

Company:	Steward Energy II, LLC	Job Number:	DM-2019-077-SEDT-NM	All Azimuths Corrected To:	**Grid North**
Well:	Salamanca State 1H	Vertical Section Plane:	359.05		
Location:	Lea County, NM	Well API Number:	30-025-45933		
Rig:	Norton Rig #6	Tie Into:	Surface	Calculation Method:	Minimum Curvature

Survey #	Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates N(+) / S(-) (ft)	Coordinates E(+)/W(-) (ft)	Closure Distance (ft)	Closure Angle (deg)	Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')	Special Notes
86	MWD	5700.00	76.85	359.20	31	5314.32	563.11	563.03	-9.28	563.11	-0.94	10.00	9.90	1.42	
87	MWD	5732.00	78.96	359.55	32	5321.03	594.40	594.32	-9.62	594.40	-0.93	6.68	6.59	1.09	
88	MWD	5763.00	81.07	359.90	31	5326.40	624.92	624.85	-9.76	624.92	-0.90	6.90	6.81	1.13	
89	MWD	5795.00	83.98	359.55	32	5330.56	656.64	656.57	-9.92	656.64	-0.87	9.16	9.09	-1.09	
90	MWD	5826.00	86.17	358.76	31	5333.23	687.53	687.45	-10.37	687.53	-0.86	7.51	7.06	-2.55	
91	MWD	5857.00	88.20	359.29	31	5334.75	718.49	718.41	-10.90	718.49	-0.87	6.77	6.55	1.71	
92	MWD	5889.00	89.96	359.46	32	5335.26	750.48	750.40	-11.25	750.48	-0.86	5.53	5.50	0.53	
93	MWD	5921.00	90.48	359.46	32	5335.14	782.48	782.40	-11.55	782.48	-0.85	1.63	1.63	0.00	
94	MWD	5983.00	91.19	359.73	62	5334.24	844.47	844.39	-11.99	844.47	-0.81	1.23	1.15	0.44	
95	MWD	6076.00	89.43	357.79	93	5333.73	937.46	937.36	-14.00	937.46	-0.86	2.82	-1.89	-2.09	
96	MWD	6168.00	91.45	358.32	92	5333.03	1029.44	1029.30	-17.12	1029.44	-0.95	2.27	2.20	0.58	
97	MWD	6260.00	89.52	357.71	92	5332.25	1121.42	1121.23	-20.31	1121.42	-1.04	2.20	-2.10	-0.66	
98	MWD	6352.00	91.98	359.64	92	5331.04	1213.39	1213.19	-22.44	1213.40	-1.06	3.40	2.67	2.10	
99	MWD	6444.00	90.84	359.29	92	5328.78	1305.36	1305.16	-23.30	1305.36	-1.02	1.30	-1.24	-0.38	
100	MWD	6537.00	90.57	358.23	93	5327.63	1398.35	1398.13	-25.31	1398.35	-1.04	1.18	-0.29	-1.14	
101	MWD	6628.00	90.48	357.97	91	5326.80	1489.34	1489.07	-28.32	1489.34	-1.09	0.30	-0.10	-0.29	
102	MWD	6741.00	90.84	358.76	113	5325.50	1602.32	1602.02	-31.55	1602.33	-1.13	0.77	0.32	0.70	
103	MWD	6833.00	90.31	359.29	92	5324.58	1694.31	1694.00	-33.11	1694.32	-1.12	0.81	-0.58	0.58	
104	MWD	6927.00	89.69	359.02	94	5324.58	1788.31	1787.99	-34.50	1788.32	-1.11	0.72	-0.66	-0.29	
105	MWD	7021.00	89.52	357.88	94	5325.22	1882.31	1881.95	-37.04	1882.31	-1.13	1.23	-0.18	-1.21	
106	MWD	7116.00	91.98	359.55	95	5323.98	1977.28	1976.91	-39.17	1977.30	-1.14	3.13	2.59	1.76	
107	MWD	7211.00	91.28	358.59	95	5321.28	2072.24	2071.85	-40.71	2072.25	-1.13	1.25	-0.74	-1.01	
108	MWD	7306.00	89.52	359.55	95	5320.61	2167.24	2166.83	-42.26	2167.25	-1.12	2.11	-1.85	1.01	
109	MWD	7400.00	89.60	359.02	94	5321.34	2261.23	2260.82	-43.43	2261.24	-1.10	0.57	0.09	-0.56	
110	MWD	7493.00	90.84	1.22	93	5320.98	2354.21	2353.82	-43.23	2354.21	-1.05	2.72	1.33	-384.73	
111	MWD	7588.00	90.48	0.96	95	5319.89	2449.14	2448.79	-41.43	2449.14	-0.97	0.47	-0.38	-0.27	
112	MWD	7682.00	91.19	2.28	94	5318.52	2543.04	2542.74	-38.77	2543.04	-0.87	1.59	0.76	1.40	
113	MWD	7777.00	90.66	0.87	95	5316.98	2637.93	2637.69	-36.16	2637.94	-0.79	1.59	-0.56	-1.48	
114	MWD	7869.00	91.10	0.52	92	5315.57	2729.88	2729.67	-35.04	2729.90	-0.74	0.61	0.48	-0.38	
115	MWD	7964.00	89.43	359.38	95	5315.13	2824.86	2824.67	-35.13	2824.89	-0.71	2.13	-1.76	377.75	
116	MWD	8057.00	91.01	358.41	93	5314.77	2917.86	2917.64	-36.92	2917.88	-0.72	1.99	1.70	-1.04	
117	MWD	8152.00	88.90	357.71	95	5314.85	3012.84	3012.58	-40.14	3012.85	-0.76	2.34	-2.22	-0.74	
118	MWD	8247.00	88.20	357.09	95	5317.25	3107.76	3107.46	-44.44	3107.77	-0.82	0.98	-0.74	-0.65	
119	MWD	8340.00	89.34	357.35	93	5319.25	3200.69	3200.32	-48.95	3200.70	-0.88	1.26	1.23	0.28	
120	MWD	8435.00	90.57	357.62	95	5319.32	3295.66	3295.23	-53.12	3295.66	-0.92	1.33	1.29	0.28	
121	MWD	8530.00	90.40	357.88	95	5318.52	3390.63	3390.15	-56.85	3390.63	-0.96	0.33	-0.18	0.27	
122	MWD	8623.00	91.28	356.65	93	5317.15	3483.57	3483.03	-61.29	3483.57	-1.01	1.63	0.95	-1.32	
123	MWD	8718.00	91.28	357.88	95	5315.03	3578.50	3577.90	-65.82	3578.51	-1.05	1.29	0.00	1.29	
124	MWD	8813.00	90.92	358.41	95	5313.21	3673.47	3672.83	-68.90	3673.48	-1.07	0.67	-0.38	0.56	
125	MWD	8907.00	90.22	357.09	94	5312.27	3767.44	3766.75	-72.59	3767.45	-1.10	1.59	-0.74	-1.40	
126	MWD	9002.00	89.78	357.44	95	5312.27	3862.39	3861.64	-77.12	3862.41	-1.14	0.59	-0.46	0.37	
127	MWD	9097.00	90.40	357.44	95	5312.12	3957.35	3956.55	-81.36	3957.39	-1.18	0.65	0.65	0.00	
128	MWD	9190.00	91.45	359.20	93	5310.62	4050.33	4049.49	-84.09	4050.36	-1.19	2.20	1.13	1.89	

Company: Steward Energy II, LLC
Well: Salamanca State 1H
Location: Lea County, NM
Rig: Norton Rig #6

Job Number: DM-2019-077-SEDT-NM
Vertical Section Plane: 359.05
Well API Number: 30-025-45933
Tie Into: Surface

All Azimuths Corrected To: **Grid North**

Calculation Method: Minimum Curvature

Survey #	Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates N(+) / S(-) (ft)	Coordinates E(+)/W(-) (ft)	Closure Distance (ft)	Closure Angle (deg)	Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')	Special Notes
129	MWD	9286.00	90.84	359.64	96	5308.70	4146.31	4145.47	-85.06	4146.34	-1.18	0.78	-0.64	0.46	
130	MWD	9380.00	92.07	359.38	94	5306.32	4240.27	4239.43	-85.86	4240.30	-1.16	1.34	1.31	-0.28	
131	MWD	9474.00	91.10	359.46	94	5303.72	4334.23	4333.39	-86.81	4334.26	-1.15	1.04	-1.03	0.09	
132	MWD	9569.00	89.34	359.46	95	5303.35	4429.23	4428.38	-87.71	4429.25	-1.13	1.85	-1.85	0.00	
133	MWD	9664.00	88.81	359.64	95	5304.89	4524.21	4523.36	-88.46	4524.23	-1.12	0.59	-0.56	0.19	
134	MWD	9758.00	89.08	358.85	94	5306.62	4618.19	4617.34	-89.69	4618.21	-1.11	0.89	0.29	-0.84	
135	MWD	9853.00	89.96	357.97	95	5307.41	4713.18	4712.30	-92.33	4713.20	-1.12	1.31	0.93	-0.93	
136	MWD	9947.00	88.46	357.62	94	5308.71	4807.15	4806.22	-95.95	4807.17	-1.14	1.64	-1.60	-0.37	
137	MWD	10041.00	91.98	357.62	94	5308.35	4901.10	4900.12	-99.85	4901.14	-1.17	3.74	3.74	0.00	
138	MWD	10074.00	92.59	357.09	33	5307.03	4934.06	4933.06	-101.37	4934.10	-1.18	2.45	1.85	-1.61	
139	PTB	10136.00	92.59	357.09	62	5304.23	4995.96	4994.92	-104.51	4996.01	-1.20	0.00	0.00	0.00	