DrilTech, LLC

MWD Survey Report

Job No: DM-2019-074-SEDT-NM

Operator:	**Steward Energy II, LLC**
Well Name:	**Heisenberg State Com 5H**
Location:	**Lea County, NM**
Rig:	**Norton Rig #6**
Directional Drilling Co:	**DrilTech, LLC**
Well API #:	**30-025-45619**
Tie Into:	**Surface**
Tie-In Date:	**5/16/19**
Date Completed:	**5/29/19**

Reference Coordinates:	LAT:	33	°	7	'	57.4610	" N
	LON:	103	°	5	'	22.9430	" W
Reference Grid Coordinates:	X:	922045.00 (ft)					
	Y:	778049.00 (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:	3806.00 (ft)	Ground Level to Mean Sea Level
Vertical Section Plane:	359.25 (deg)	

North Alignment: **Grid North**

Magnetic Data	Section 1	Section 2	Section 3	Section 4
Magnetic Declination (deg)	6.58			
Grid (deg)	0.68			
TOTAL CORRECTION (deg)	**5.90**			
Depth Start (MD Ft)	0.00			
Depth End (MD Ft)	13297.00			

REMARKS:

Company:	Steward Energy II, LLC	Job Number:	DM-2019-074-SEDT-NM	All Azimuths Corrected To:	Grid North
Well:	Heisenberg State Com 5H	Vertical Section Plane:	359.25		
Location:	Lea County, NM	Well API Number:	30-025-45619		
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	99.00	0.79	157.92	99	99.00	-0.64	-0.63	0.26	0.68	157.92	0.80	0.80	159.52	
2	MWD	130.00	0.88	156.60	31	129.99	-1.05	-1.05	0.43	1.13	157.64	0.30	0.29	-4.26	
3	MWD	221.00	0.88	153.79	91	220.98	-2.33	-2.32	1.02	2.53	156.29	0.05	0.00	-3.09	
4	MWD	312.00	0.53	138.41	91	311.98	-3.28	-3.26	1.61	3.63	153.77	0.43	-0.38	-16.90	
5	MWD	407.00	0.62	142.19	95	406.97	-4.02	-3.99	2.21	4.57	151.01	0.10	0.09	3.98	
6	MWD	499.00	1.32	124.61	92	498.96	-5.03	-4.99	3.39	6.03	145.81	0.82	0.76	-19.11	
7	MWD	591.00	2.99	110.99	92	590.89	-6.53	-6.45	6.50	9.16	134.77	1.89	1.82	-14.80	
8	MWD	686.00	3.69	101.76	95	685.73	-8.11	-7.96	11.81	14.24	123.99	0.93	0.74	-9.72	
9	MWD	781.00	4.04	97.98	95	780.51	-9.28	-9.05	18.12	20.25	116.54	0.46	0.37	-3.98	
10	MWD	875.00	3.78	89.37	94	874.29	-9.79	-9.47	24.49	26.26	111.15	0.68	-0.28	-9.16	
11	MWD	968.00	3.52	89.54	93	967.11	-9.81	-9.42	30.41	31.84	107.21	0.28	-0.28	0.18	
12	MWD	1064.00	3.52	88.05	96	1062.92	-9.77	-9.29	36.31	37.48	104.36	0.10	0.00	-1.55	
13	MWD	1158.00	3.78	87.17	94	1156.73	-9.60	-9.04	42.28	43.24	102.07	0.28	0.28	-0.94	
14	MWD	1253.00	3.78	88.34	95	1251.53	-9.43	-8.80	48.54	49.33	100.27	0.08	0.00	1.23	
15	MWD	1347.00	3.69	86.67	94	1345.33	-9.25	-8.53	54.66	55.32	98.87	0.15	-0.10	-1.78	
16	MWD	1442.00	3.78	85.62	95	1440.13	-8.91	-8.11	60.83	61.37	97.60	0.12	0.09	-1.11	
17	MWD	1535.00	2.81	88.52	93	1532.97	-8.69	-7.82	66.17	66.63	96.74	1.06	-1.04	3.12	
18	MWD	1630.00	2.55	94.32	95	1627.87	-8.84	-7.92	70.60	71.05	96.40	0.40	-0.27	6.11	
19	MWD	1723.00	2.46	77.36	93	1720.78	-8.62	-7.64	74.61	75.00	95.85	0.80	-0.10	-18.24	
20	MWD	1817.00	2.64	78.41	94	1814.69	-7.79	-6.76	78.70	78.99	94.91	0.20	0.19	1.12	
21	MWD	1910.00	3.17	86.41	93	1907.57	-7.26	-6.17	83.37	83.60	94.23	0.72	0.57	8.60	
22	MWD	2005.00	3.25	87.73	95	2002.42	-7.06	-5.90	88.68	88.88	93.81	0.11	0.08	1.39	
23	MWD	2099.00	3.34	88.52	94	2096.26	-6.96	-5.72	94.08	94.25	93.48	0.11	0.10	0.84	
24	MWD	2194.00	3.52	86.32	95	2191.09	-6.77	-5.47	99.76	99.91	93.14	0.23	0.19	-2.32	
25	MWD	2287.00	3.52	85.97	93	2283.92	-6.46	-5.08	105.45	105.58	92.76	0.02	0.00	-0.38	
26	MWD	2375.00	3.69	84.91	88	2371.74	-6.09	-4.64	110.97	111.07	92.40	0.21	0.19	-1.20	
27	MWD	2492.00	3.96	89.40	117	2488.48	-5.82	-4.27	118.76	118.84	92.06	0.34	0.23	3.84	
28	MWD	2586.00	3.69	86.41	94	2582.27	-5.68	-4.04	125.02	125.09	91.85	0.36	-0.29	-3.18	
29	MWD	2681.00	3.52	86.32	95	2677.08	-5.38	-3.66	130.99	131.04	91.60	0.18	-0.18	-0.09	
30	MWD	2775.00	3.25	101.00	94	2770.92	-5.77	-3.99	136.48	136.54	91.67	0.96	-0.29	15.62	
31	MWD	2869.00	3.78	97.39	94	2864.74	-6.75	-4.89	142.17	142.25	91.97	0.61	0.56	-3.84	
32	MWD	2964.00	2.29	113.04	95	2959.61	-7.96	-6.04	147.02	147.15	92.35	1.78	-1.57	16.47	
33	MWD	3058.00	2.55	78.15	94	3053.53	-8.32	-6.34	150.80	150.93	92.41	1.57	0.28	-37.12	
34	MWD	3153.00	2.11	88.17	95	3148.45	-7.88	-5.85	154.61	154.72	92.17	0.63	-0.46	10.55	
35	MWD	3247.00	1.85	87.29	94	3242.40	-7.79	-5.73	157.86	157.96	92.08	0.28	-0.28	-0.94	
36	MWD	3341.00	2.90	94.67	94	3336.32	-7.97	-5.85	161.74	161.85	92.07	1.16	1.12	7.85	
37	MWD	3435.00	3.17	98.80	94	3430.18	-8.62	-6.44	166.68	166.81	92.21	0.37	0.29	4.39	
38	MWD	3529.00	3.17	91.24	94	3524.04	-9.14	-6.89	171.85	171.99	92.30	0.44	0.00	-8.04	
39	MWD	3623.00	2.64	82.06	94	3617.92	-9.24	-5.94	176.36	176.46	91.93	1.65	-0.56	-31.04	
40	MWD	3718.00	2.02	36.66	95	3712.85	-5.91	-3.57	179.29	179.33	91.14	1.25	-0.65	-26.74	
41	MWD	3812.00	1.23	27.52	94	3806.81	-3.71	-1.34	180.75	180.75	90.43	0.88	-0.84	-9.72	
42	MWD	3907.00	0.35	25.94	95	3901.80	-2.55	-0.18	181.35	181.35	90.06	0.93	-0.93	-1.66	
43	MWD	4002.00	0.62	90.19	95	3996.80	-2.30	0.08	181.99	181.99	89.97	0.59	0.28	67.63	
44	MWD	4097.00	0.62	67.25	95	4091.79	-2.12	0.28	182.98	182.98	89.91	0.26	0.00	-24.15	
45	MWD	4190.00	0.70	57.84	93	4184.78	-1.83	0.77	183.92	183.92	89.76	0.14	0.09	-10.12	
46	MWD	4285.00	0.62	78.76	95	4279.78	-1.24	1.18	184.92	184.92	89.63	0.27	-0.08	22.02	
47	MWD	4380.00	0.62	55.03	95	4374.77	-0.85	1.58	185.84	185.85	89.51	0.27	0.00	-24.98	
48	MWD	4475.00	0.62	6.69	95	4469.77	-0.06	2.38	186.32	186.34	89.27	0.53	0.00	-50.88	
49	MWD	4568.00	0.62	343.22	93	4562.76	0.93	3.36	186.24	186.27	88.97	0.27	0.00	381.86	

DRILTECH

Company: Steward Energy II, LLC
Well: Heisenberg State Com 5H
Location: Lea County, NM
Rig: Norton Rig #6

Job Number: DM-2019-074-SEDT-NM
Vertical Section Plane: 359.25
Well API Number: 30-025-45619
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
50	MWD	4599.00	0.88	344.72	31	4593.76	1.32	3.75	186.12	186.16	88.84	0.84	0.84	4.84	
51	MWD	4631.00	2.64	0.80	32	4625.74	2.29	4.73	186.07	186.13	88.54	5.66	5.50	-1074.75	
52	MWD	4663.00	5.01	5.99	32	4657.67	4.42	6.86	186.23	186.35	87.89	7.48	7.41	16.22	
53	MWD	4694.00	7.74	8.27	31	4688.48	7.82	10.27	186.67	186.95	86.85	8.84	8.81	7.35	
54	MWD	4726.00	10.29	6.34	32	4720.08	12.79	15.24	187.29	187.91	85.35	8.02	7.97	-6.03	
55	MWD	4758.00	12.66	4.85	32	4751.44	19.12	21.58	187.91	189.14	83.45	7.46	7.41	-4.66	
56	MWD	4789.00	15.30	4.23	31	4781.52	26.57	29.04	188.49	190.72	81.24	8.53	8.52	-2.00	
57	MWD	4820.00	17.85	5.28	31	4811.22	35.37	37.85	189.23	192.98	78.69	8.28	8.23	3.39	
58	MWD	4852.00	20.66	5.02	32	4841.43	45.87	48.36	190.16	196.23	75.73	8.79	8.78	-0.81	
59	MWD	4883.00	23.13	3.26	31	4870.19	57.39	59.89	191.00	200.17	72.59	8.24	7.97	-5.68	
60	MWD	4915.00	25.59	1.59	32	4899.34	70.56	73.08	191.55	205.02	69.12	7.98	7.69	-5.22	
61	MWD	4947.00	27.96	1.86	32	4927.91	84.96	87.49	191.99	210.98	65.50	7.42	7.41	0.84	
62	MWD	4978.00	29.72	3.18	31	4955.06	99.89	102.42	192.65	218.18	62.00	6.04	5.68	4.26	
63	MWD	5009.00	31.48	3.35	31	4981.75	115.63	118.18	193.55	226.78	58.59	5.68	5.68	0.55	
64	MWD	5041.00	33.59	3.00	32	5008.72	132.80	135.36	194.50	236.97	55.16	6.62	6.59	-1.09	
65	MWD	5073.00	36.32	2.38	32	5034.95	151.10	153.67	195.36	248.56	51.81	8.60	8.53	-1.94	
66	MWD	5104.00	38.69	2.30	31	5059.54	169.95	172.53	196.13	261.21	48.66	7.65	7.65	-0.26	
67	MWD	5134.00	40.80	1.86	30	5082.60	189.10	191.70	196.82	274.75	45.76	7.10	7.03	-1.47	
68	MWD	5166.00	42.91	0.54	32	5106.44	210.44	213.04	197.27	290.34	42.80	7.14	6.59	-4.13	
69	MWD	5197.00	45.37	359.13	31	5128.68	232.02	234.63	197.20	306.49	40.05	8.54	7.94	1156.74	
70	MWD	5229.00	48.01	358.08	32	5150.63	255.31	257.90	196.63	324.31	37.32	8.59	8.25	-3.28	
71	MWD	5261.00	50.21	357.64	32	5171.58	279.49	282.07	195.72	343.33	34.76	6.95	6.88	-1.37	
72	MWD	5292.00	52.41	357.46	31	5190.96	303.67	306.25	194.69	362.89	32.44	7.11	7.10	-0.58	
73	MWD	5323.00	54.87	357.29	31	5209.33	328.62	331.18	193.54	383.59	30.30	7.95	7.94	-0.55	
74	MWD	5355.00	57.16	356.85	32	5227.22	355.13	357.68	192.18	406.04	28.25	7.25	7.16	-1.37	
75	MWD	5387.00	59.79	356.76	32	5243.95	382.38	384.91	190.66	429.55	26.35	8.22	8.22	-0.28	Start Tangent @ 5,397'
76	MWD	5417.00	60.94	356.94	30	5258.78	408.44	410.95	189.23	452.42	24.72	3.87	3.83	0.60	
77	MWD	5449.00	61.29	356.67	32	5274.24	436.43	438.92	187.67	477.36	23.15	1.32	1.09	-0.84	
78	MWD	5480.00	61.73	356.85	31	5289.03	463.65	466.13	186.13	501.91	21.77	1.51	1.42	0.58	
79	MWD	5512.00	61.82	357.20	32	5304.16	491.82	494.28	184.67	527.65	20.49	1.00	0.28	1.09	
80	MWD	5543.00	61.64	356.32	31	5318.84	519.10	521.54	183.12	552.76	19.35	2.57	-0.58	-2.84	
81	MWD	5575.00	61.64	356.23	32	5334.04	547.22	549.64	181.29	578.77	18.25	0.25	0.00	-0.28	End Tangent @ 5,597'
82	MWD	5606.00	63.14	356.50	31	5348.41	574.66	577.06	179.55	604.34	17.28	4.90	4.84	0.87	
83	MWD	5637.00	65.95	356.58	31	5361.73	602.61	604.99	177.88	630.60	16.38	9.07	9.06	0.26	
84	MWD	5669.00	68.68	357.11	32	5374.07	632.11	634.47	176.24	658.49	15.52	8.67	8.53	1.66	
85	MWD	5701.00	71.49	358.08	32	5384.97	662.18	664.53	174.98	687.18	14.75	9.23	8.78	3.03	
86	MWD	5732.00	74.22	358.34	31	5394.11	691.79	694.13	174.06	715.62	14.08	8.84	8.81	0.84	
87	MWD	5764.00	77.29	358.61	32	5401.98	722.80	725.13	173.23	745.54	13.44	9.63	9.59	0.84	
88	MWD	5795.00	80.02	359.22	31	5408.08	753.19	755.52	172.66	775.00	12.87	9.02	8.81	1.97	
89	MWD	5827.00	81.51	359.48	32	5413.22	784.78	787.10	172.30	805.74	12.35	4.72	4.66	0.81	
90	MWD	5858.00	83.19	0.01	31	5417.34	815.50	817.82	172.16	835.75	11.89	5.68	5.42	-1159.58	
91	MWD	5890.00	86.44	0.98	32	5420.24	847.36	849.69	172.44	867.01	11.47	10.60	10.16	3.03	
92	MWD	5921.00	89.16	1.51	31	5421.43	878.31	880.65	173.11	897.51	11.12	8.94	8.77	1.71	
93	MWD	5952.00	90.04	1.68	31	5421.64	909.28	911.64	173.97	928.09	10.80	2.89	2.84	0.55	
94	MWD	5983.00	89.87	1.24	31	5421.67	940.26	942.63	174.76	958.69	10.50	1.52	-0.55	-1.42	
95	MWD	6015.00	89.96	1.59	32	5421.71	972.24	974.62	175.55	990.30	10.21	1.13	0.28	1.09	
96	MWD	6046.00	90.31	1.24	31	5421.64	1003.22	1005.61	176.32	1020.95	9.94	1.60	1.13	-1.13	
97	MWD	6077.00	90.40	1.33	31	5421.45	1034.20	1036.60	177.01	1051.61	9.69	0.41	0.29	0.29	
98	MWD	6172.00	91.98	1.77	95	5419.48	1129.10	1131.54	179.58	1145.71	9.02	1.73	1.66	0.46	
99	MWD	6265.00	91.36	0.45	93	5416.76	1222.00	1224.48	181.38	1237.85	8.43	1.57	-0.67	-1.42	

Company:	Steward Energy II, LLC	Job Number:	DM-2019-074-SEDT-NM	All Azimuths Corrected To:	Grid North
Well:	Heisenberg State Com 5H	Vertical Section Plane:	359.25		
Location:	Lea County, NM	Well API Number:	30-025-45619		
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
100	MWD	6360.00	90.57	359.31	95	5415.16	1316.98	1319.47	181.19	1331.85	7.82	1.46	-0.83	377.75	
101	MWD	6455.00	90.84	358.69	95	5414.00	1411.97	1414.45	179.53	1425.79	7.23	0.71	0.28	-0.65	
102	MWD	6548.00	91.98	359.40	93	5411.71	1504.94	1507.40	177.98	1517.87	6.73	1.44	1.23	0.76	
103	MWD	6640.00	90.31	357.20	92	5409.87	1596.90	1599.33	175.25	1608.91	6.25	3.00	-1.82	-2.39	
104	MWD	6734.00	90.31	356.67	94	5409.36	1690.83	1693.20	170.22	1701.73	5.74	0.56	0.00	-0.56	
105	MWD	6828.00	91.71	357.64	94	5407.70	1784.74	1787.06	165.56	1794.72	5.29	1.81	1.49	1.03	
106	MWD	6923.00	88.90	356.41	95	5407.20	1879.66	1881.92	160.63	1888.77	4.88	3.23	-2.96	-1.29	
107	MWD	7037.00	89.87	358.25	114	5408.42	1993.58	1995.79	155.32	2001.82	4.45	1.82	0.85	1.61	
108	MWD	7131.00	91.89	359.13	94	5406.98	2087.56	2089.75	153.17	2095.35	4.19	2.34	2.15	0.94	
109	MWD	7226.00	91.98	358.43	95	5403.77	2182.50	2184.67	151.15	2189.89	3.96	0.74	0.09	-0.74	
110	MWD	7320.00	92.33	359.48	94	5400.24	2276.43	2278.59	149.43	2283.48	3.75	1.18	0.37	1.12	
111	MWD	7415.00	91.98	1.42	95	5396.66	2371.34	2373.51	150.18	2378.26	3.62	2.07	-0.37	-376.91	
112	MWD	7509.00	91.63	0.98	94	5393.70	2465.24	2467.44	152.15	2472.13	3.53	0.60	-0.37	-0.47	
113	MWD	7604.00	91.01	1.77	95	5391.51	2560.15	2562.39	154.43	2567.04	3.45	1.06	-0.65	0.83	
114	MWD	7699.00	90.04	0.98	95	5390.64	2655.08	2657.36	156.71	2661.97	3.37	1.32	-1.02	-0.83	
115	MWD	7793.00	89.96	1.24	94	5390.64	2749.03	2751.34	158.53	2755.90	3.30	0.29	-0.09	0.28	
116	MWD	7888.00	90.40	3.79	95	5390.34	2843.87	2846.24	162.70	2850.88	3.27	2.72	0.46	2.68	
117	MWD	7983.00	89.87	3.09	95	5390.12	2938.61	2941.07	168.40	2945.88	3.28	0.92	-0.56	-0.74	
118	MWD	8078.00	91.01	2.74	95	5389.39	3033.41	3035.94	173.23	3040.88	3.27	1.26	1.20	-0.37	
119	MWD	8173.00	89.87	1.86	95	5388.66	3128.27	3130.86	177.04	3135.86	3.24	1.52	-1.20	-0.93	
120	MWD	8267.00	88.99	0.10	94	5389.60	3222.22	3224.83	178.65	3229.78	3.17	2.09	-0.94	-1.87	
121	MWD	8361.00	88.99	358.34	94	5391.25	3316.20	3318.81	177.37	3323.54	3.06	1.87	0.00	381.11	
122	MWD	8456.00	90.92	358.43	95	5391.33	3411.19	3413.76	174.69	3418.23	2.93	2.03	2.03	0.09	
123	MWD	8549.00	91.54	359.84	93	5389.33	3504.16	3506.73	173.29	3511.01	2.83	1.66	0.67	1.52	
124	MWD	8644.00	91.71	357.81	95	5388.64	3599.12	3601.67	171.34	3605.74	2.72	2.14	0.18	-2.14	
125	MWD	8738.00	91.80	358.69	94	5383.76	3693.06	3695.58	168.47	3699.42	2.61	0.94	0.10	0.94	
126	MWD	8831.00	91.98	358.96	93	5380.69	3786.00	3788.51	166.56	3792.17	2.52	0.35	0.19	0.29	
127	MWD	8922.00	91.89	358.78	91	5377.62	3876.95	3879.44	164.77	3882.94	2.43	0.22	-0.10	-0.20	
128	MWD	9015.00	91.54	357.99	93	5374.84	3969.90	3972.38	162.15	3975.67	2.34	0.93	-0.38	-0.85	
129	MWD	9107.00	91.80	359.22	92	5372.15	4061.85	4064.29	159.91	4067.44	2.25	1.37	0.28	1.34	
130	MWD	9197.00	90.75	358.96	90	5370.15	4151.83	4154.26	158.48	4157.28	2.18	1.20	-1.17	-0.29	
131	MWD	9290.00	90.92	358.61	93	5368.80	4244.81	4247.22	156.51	4250.11	2.11	0.42	0.18	-0.38	
132	MWD	9382.00	89.52	359.92	92	5368.44	4336.81	4339.21	155.33	4341.99	2.05	2.08	-1.52	1.42	
133	MWD	9474.00	90.31	359.57	92	5368.58	4428.80	4431.21	154.92	4433.92	2.00	0.94	0.86	-0.38	
134	MWD	9568.00	90.92	0.10	92	5367.59	4520.79	4523.20	154.66	4525.85	1.96	0.88	0.66	-390.73	
135	MWD	9658.00	91.19	0.54	92	5365.90	4612.76	4615.19	155.17	4617.79	1.93	0.56	0.29	0.48	
136	MWD	9752.00	90.75	359.31	94	5364.31	4706.74	4709.17	155.05	4711.72	1.89	1.39	-0.47	381.67	
137	MWD	9848.00	91.01	359.48	96	5362.83	4802.73	4805.15	154.03	4807.62	1.84	0.32	0.27	0.18	
138	MWD	9943.00	90.75	358.17	95	5361.37	4897.71	4900.12	152.09	4902.48	1.78	1.41	-0.27	-1.38	
139	MWD	10036.00	90.84	356.67	93	5360.08	4990.65	4993.01	147.90	4995.20	1.70	1.62	0.10	-1.61	
140	MWD	10131.00	91.10	356.06	95	5358.47	5085.52	5087.81	141.88	5089.79	1.60	0.70	0.27	-0.64	
141	MWD	10226.00	89.60	356.58	95	5357.89	5180.39	5182.61	135.78	5184.39	1.50	1.67	-1.58	0.55	
142	MWD	10320.00	90.31	358.69	94	5357.97	5274.34	5276.52	131.90	5278.17	1.43	2.37	0.76	2.24	
143	MWD	10414.00	90.57	358.87	94	5357.25	5368.34	5370.50	129.90	5372.07	1.39	0.34	0.28	0.19	
144	MWD	10509.00	89.69	356.76	95	5357.03	5463.30	5465.42	126.28	5466.88	1.32	2.41	-0.93	-2.22	
145	MWD	10603.00	90.13	355.53	94	5357.18	5557.16	5559.21	119.96	5560.50	1.24	1.39	0.47	-1.31	
146	MWD	10697.00	90.48	355.88	94	5356.68	5650.98	5652.94	112.92	5654.07	1.14	0.53	0.37	0.37	
147	MWD	10792.00	90.75	356.58	95	5355.66	5745.84	5747.73	106.67	5748.72	1.06	0.79	0.28	0.74	
148	MWD	10886.00	91.19	356.94	94	5354.07	5839.74	5841.57	101.36	5842.45	0.99	0.60	0.47	0.38	
149	MWD	10980.00	91.98	356.75	94	5351.47	5933.62	5935.39	96.19	5936.17	0.93	0.86	0.84	-0.20	

		Company:	Steward Energy II, LLC			Job Number:	DM-2019-074-SEDT-NM		All Azimuths Corrected To:	Grid North					
		Well:	Heisenberg State Com 5H			Vertical Section Plane:	359.25								
		Location:	Lea County, NM			Well API Number:	30-025-45619								
		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
150	MWD	11074.00	92.95	357.55	94	5347.42	6027.47	6029.18	91.52	6029.88	0.87	1.34	1.03	0.85	
151	MWD	11169.00	92.86	358.87	95	5342.61	6122.33	6124.01	88.56	6124.65	0.83	1.39	-0.09	1.39	
152	MWD	11264.00	91.71	0.45	95	5338.82	6217.25	6218.93	87.99	6219.55	0.81	2.06	-1.21	-377.28	
153	MWD	11360.00	91.19	359.48	96	5336.39	6313.21	6314.90	87.94	6315.51	0.80	1.15	-0.54	373.99	
154	MWD	11454.00	89.96	1.07	94	5335.45	6407.18	6408.89	88.39	6409.50	0.79	2.14	-1.31	-381.29	
155	MWD	11549.00	90.04	0.54	95	5335.45	6502.15	6503.88	89.72	6504.50	0.79	0.56	0.08	-0.56	
156	MWD	11643.00	90.48	0.71	94	5335.02	6596.12	6597.87	90.75	6598.49	0.79	0.50	0.47	0.18	
157	MWD	11737.00	90.48	1.33	94	5334.23	6690.07	6691.85	92.42	6692.49	0.79	0.66	0.00	0.66	
158	MWD	11831.00	90.57	1.84	94	5333.37	6783.98	6785.81	95.10	6786.48	0.80	0.66	0.10	0.65	
159	MWD	11926.00	90.92	0.63	95	5332.14	6878.91	6880.78	97.23	6881.46	0.81	1.43	0.37	-1.38	
160	MWD	12020.00	91.45	359.84	94	5330.19	6972.88	6974.75	97.62	6975.44	0.80	1.01	0.56	382.14	
161	MWD	12115.00	89.78	359.66	95	5329.17	7067.87	7069.74	97.20	7070.41	0.79	1.77	-1.76	-0.19	
162	MWD	12209.00	89.87	0.36	94	5329.46	7161.86	7163.74	97.22	7164.40	0.78	0.75	0.10	-382.23	
163	MWD	12304.00	90.13	1.07	95	5329.46	7256.82	7258.73	98.40	7259.40	0.78	0.80	0.27	0.75	
164	MWD	12399.00	90.48	0.27	95	5328.96	7351.79	7353.73	99.52	7354.40	0.78	0.92	0.37	-0.84	
165	MWD	12493.00	91.89	359.04	94	5327.01	7445.77	7447.70	98.95	7448.36	0.76	1.99	1.50	381.67	
166	MWD	12586.00	91.45	359.48	93	5324.30	7538.73	7540.65	97.75	7541.29	0.74	0.67	-0.47	0.47	
167	MWD	12679.00	89.25	0.63	93	5323.73	7631.71	7633.64	97.84	7634.27	0.73	2.67	-2.37	-385.86	
168	MWD	12773.00	89.60	359.48	94	5324.68	7725.69	7727.64	97.93	7728.26	0.73	1.28	0.37	381.76	
169	MWD	12867.00	90.13	357.90	94	5324.90	7819.68	7821.61	95.78	7822.19	0.70	1.77	0.56	-1.68	
170	MWD	12960.00	90.57	359.40	93	5324.33	7912.67	7914.58	93.59	7915.13	0.68	1.68	0.47	1.61	
171	MWD	13053.00	90.75	358.87	93	5323.26	8005.67	8007.56	92.19	8008.09	0.66	0.60	0.19	-0.57	
172	MWD	13149.00	90.75	357.73	96	5322.00	8101.64	8103.51	89.34	8104.00	0.63	1.19	0.00	-1.19	
173	MWD	13238.00	90.66	356.58	89	5320.91	8190.58	8192.39	84.92	8192.83	0.59	1.30	-0.10	-1.29	
174	PTB	13297.00	90.66	356.58	59	5320.23	8249.51	8251.28	81.40	8251.68	0.57	0.00	0.00	0.00	

Company:	Steward Energy II, LLC	Job Number:	DM-2019-074-SEDT-NM	All Azimuths Corrected To:	Grid North	
Well:	Heisenberg State Com 5H	Vertical Section Plane:	359.25			
Location:	Lea County, NM	Well API Number:	30-025-45619			
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