

Rec'd 7/2/2020



Final MWD Survey Certification

Lea County, New Mexico

Client: Devon Energy

Well Name: Green Wave 20-32 Fed State Com 4H

Total Job No: SW-190054

API No: 30-025-46046

Start Date: 2/7/2020

End Date: 2/26/2020

Measured Start Depth: 0 feet

Measured End Depth with PTB: 22928 feet

I, Blair Kenzle, MWD Operator, hereby certify that; I am employed by Total Directional Services, LLC and we conducted or supervised the taking of these open hole MWD surveys at the request of this client. This data is true, correct, complete and within the limitations of the tool as set forth by Total Directional Services, LLC. I am authorized and qualified to make this report and have reviewed this report and find that it conforms to the principals and procedures as set forth by Total Directional Services, LLC.

Date: 2/26/2020

Signed: *Blair Kenzle*

svy	depth	inc	azm	tvb	ns	ew	vs	dls
Tiein	0	0	0	0	0	0	0	0
1	180	0.1	98.6	180	-0.02	0.16	0.02	0.06
2	275	0.1	137.9	275	-0.1	0.29	0.09	0.07
3	370	0.3	128.5	370	-0.31	0.54	0.29	0.21
4	465	0.3	140.3	465	-0.66	0.9	0.63	0.06
5	561	0.6	158.1	560.99	-1.32	1.24	1.28	0.34
6	656	0.9	156.8	655.99	-2.47	1.72	2.41	0.32
7	751	1	162.2	750.97	-3.94	2.27	3.86	0.14
8	771	1	160.7	770.97	-4.27	2.38	4.19	0.13
9	906	1.4	158.3	905.94	-6.92	3.38	6.8	0.3
10	1000	0.8	196.7	999.92	-8.61	3.62	8.48	0.98
11	1096	1	220.6	1095.91	-9.89	2.88	9.79	0.44
12	1191	1	216.3	1190.9	-11.19	1.85	11.12	0.08
13	1286	1.1	229.6	1285.88	-12.45	0.66	12.42	0.28
14	1381	1.2	226.8	1380.86	-13.72	-0.76	13.74	0.12
15	1476	1.2	231.4	1475.84	-15.02	-2.26	15.09	0.1
16	1571	1.1	234.3	1570.82	-16.17	-3.78	16.29	0.12
17	1667	1.1	241.9	1666.81	-17.15	-5.34	17.32	0.15
18	1762	1.1	246.3	1761.79	-17.94	-6.98	18.17	0.09
19	1857	1.1	258.9	1856.77	-18.48	-8.71	18.77	0.25
20	1952	1.3	260.5	1951.75	-18.84	-10.66	19.19	0.21
21	2047	1.5	261.7	2046.72	-19.19	-12.96	19.63	0.21
22	2142	4.2	297.8	2141.6	-17.75	-17.27	18.34	3.28
23	2237	7.1	312.8	2236.13	-12.14	-24.65	12.98	3.4
24	2332	10.1	314.3	2330.06	-2.33	-34.92	3.53	3.17
25	2427	10.3	315	2423.55	9.49	-46.89	-7.87	0.25
26	2523	10.3	315	2518.01	21.63	-59.03	-19.58	0
27	2618	9.1	324.3	2611.65	33.74	-69.42	-31.32	2.07
28	2713	9.1	324	2705.46	45.92	-78.22	-43.19	0.05
29	2808	9	322.5	2799.27	57.89	-87.16	-54.85	0.27
30	2903	9	320.5	2893.11	69.52	-96.41	-66.15	0.33
31	2999	8.4	325.3	2988	81.08	-105.18	-77.4	0.98
32	3094	8.2	327.6	3082.01	92.5	-112.76	-88.55	0.41
33	3189	7.9	326.9	3176.07	103.69	-119.95	-99.49	0.33
34	3284	7.6	328.5	3270.2	114.52	-126.8	-110.07	0.39
35	3380	7.5	330.4	3365.37	125.38	-133.21	-120.7	0.28
36	3475	7.4	333.5	3459.57	136.25	-139	-131.36	0.44
37	3570	7.6	324.7	3553.76	146.85	-145.36	-141.74	1.23
38	3666	8	319	3648.87	157.07	-153.42	-151.68	0.91
39	3761	7.7	319.2	3742.98	166.88	-161.91	-161.18	0.32
40	3856	7.2	322.6	3837.18	176.43	-169.69	-170.46	0.7

41	3951	6.7	322.7	3931.48	185.56	-176.66	-179.35	0.53
42	4046	6.3	323.4	4025.87	194.16	-183.13	-187.71	0.43
43	4142	6.2	319.5	4121.3	202.33	-189.63	-195.65	0.45
44	4237	6.2	318.1	4215.75	210.05	-196.39	-203.13	0.16
45	4332	6.3	316.6	4310.18	217.65	-203.4	-210.49	0.2
46	4428	6.5	314.6	4405.58	225.29	-210.89	-217.87	0.31
47	4523	6.3	312.7	4499.99	232.6	-218.55	-224.91	0.31
48	4618	6.6	315.8	4594.39	240.05	-226.18	-232.09	0.48
49	4713	6.2	317.3	4688.8	247.74	-233.47	-239.52	0.46
50	4809	5.9	318.5	4784.26	255.24	-240.25	-246.79	0.34
51	4904	7.2	328.3	4878.64	263.96	-246.62	-255.29	1.8
52	4999	7.3	335.4	4972.89	274.52	-252.26	-265.64	0.95
53	5095	6.4	335.7	5068.2	284.94	-257	-275.89	0.94
54	5190	5.9	332.8	5162.65	294.11	-261.41	-284.9	0.62
55	5285	4.3	329.4	5257.27	301.52	-265.45	-292.17	1.71
56	5381	5.2	321.5	5352.94	308.02	-269.99	-298.51	1.16
57	5476	7.3	319.2	5447.37	315.96	-276.62	-306.21	2.23
58	5571	8.7	317.5	5541.45	325.83	-285.42	-315.77	1.49
59	5666	8.8	316.1	5635.34	336.36	-295.31	-325.96	0.25
60	5761	8.7	315.1	5729.24	346.68	-305.42	-335.93	0.19
61	5856	8.6	314.6	5823.16	356.76	-315.55	-345.65	0.13
62	5952	8.4	312.8	5918.1	366.57	-325.81	-355.09	0.35
63	6047	8.5	323.4	6012.08	376.92	-335.08	-365.11	1.64
64	6142	8.6	328	6106.02	388.58	-343.03	-376.49	0.73
65	6237	8.3	327.5	6199.99	400.38	-350.48	-388.04	0.33
66	6332	8.4	327.6	6293.98	412.03	-357.88	-399.41	0.11
67	6428	8.1	325.3	6388.99	423.51	-365.49	-410.63	0.46
68	6523	7.9	324.4	6483.06	434.32	-373.1	-421.17	0.25
69	6618	7.7	323	6577.19	444.71	-380.73	-431.29	0.29
70	6713	7.4	321.6	6671.36	454.59	-388.36	-440.9	0.37
71	6808	7.3	320.1	6765.58	464.01	-396.03	-450.05	0.23
72	6903	7.2	319.1	6859.82	473.14	-403.8	-458.91	0.17
73	6998	7.2	318.5	6954.07	482.1	-411.65	-467.59	0.08
74	7093	5.6	325.2	7048.48	490.37	-418.24	-475.62	1.86
75	7189	4.7	327.3	7144.09	497.52	-423.04	-482.61	0.96
76	7284	2	343.3	7238.92	502.39	-425.61	-487.38	2.98
77	7379	1.1	350.3	7333.89	504.87	-426.25	-489.84	0.97
78	7474	1.2	339.6	7428.87	506.7	-426.75	-491.66	0.25
79	7569	1	313.8	7523.85	508.21	-427.69	-493.13	0.56
80	7664	1	302.6	7618.84	509.23	-428.99	-494.1	0.21
81	7759	1	296.1	7713.82	510.04	-430.43	-494.87	0.12
82	7855	0.9	290.9	7809.81	510.68	-431.89	-495.45	0.14

83	7950	1	285.7	7904.79	511.17	-433.38	-495.89	0.14
84	8045	1	285	7999.78	511.61	-434.98	-496.27	0.01
85	8140	0.9	278.9	8094.77	511.94	-436.52	-496.55	0.15
86	8235	0.9	267.8	8189.76	512.03	-438	-496.59	0.18
87	8330	1	259	8284.74	511.84	-439.56	-496.35	0.19
88	8426	1.1	256.5	8380.73	511.46	-441.28	-495.91	0.11
89	8521	1.2	248.9	8475.71	510.89	-443.09	-495.28	0.19
90	8616	1.2	239.5	8570.69	510.03	-444.88	-494.35	0.21
91	8711	1.7	252.4	8665.66	509.1	-447.08	-493.35	0.63
92	8806	2.9	238.5	8760.58	507.42	-450.47	-491.55	1.38
93	8901	1.3	229.5	8855.51	505.46	-453.34	-489.5	1.71
94	8996	1.4	227.9	8950.49	503.98	-455.02	-487.96	0.11
95	9091	1.4	223.1	9045.46	502.36	-456.67	-486.28	0.12
96	9186	1.5	226.3	9140.43	500.65	-458.37	-484.52	0.14
97	9282	1.5	225.6	9236.39	498.9	-460.17	-482.71	0.02
98	9377	1.5	228.5	9331.36	497.21	-461.99	-480.95	0.08
99	9472	1.5	229.8	9426.33	495.58	-463.87	-479.26	0.04
100	9567	1.7	231.3	9521.29	493.9	-465.92	-477.51	0.22
101	9662	1.6	234.4	9616.25	492.25	-468.1	-475.78	0.14
102	9757	1.2	250.7	9711.22	491.15	-470.12	-474.61	0.59
103	9853	1.5	227.5	9807.2	489.96	-471.99	-473.36	0.64
104	9948	1.5	201	9902.17	487.96	-473.36	-471.32	0.72
105	10042	1.5	177.7	9996.14	485.59	-473.75	-468.93	0.64
106	10137	1.3	142.7	10091.11	483.49	-473.04	-466.85	0.91
107	10232	1	112.8	10186.09	482.31	-471.63	-465.72	0.7
108	10327	0.8	79.8	10281.08	482.1	-470.21	-465.57	0.57
109	10423	0.4	60.3	10377.07	482.39	-469.26	-465.89	0.46
110	10518	0.3	272.8	10472.07	482.57	-469.22	-466.07	0.71
111	10613	0.6	268.8	10567.07	482.57	-469.97	-466.04	0.32
112	10708	1.1	275.9	10662.06	482.65	-471.37	-466.08	0.54
113	10804	1	255.5	10758.04	482.54	-473.1	-465.9	0.4
114	10899	1	236.1	10853.03	481.87	-474.59	-465.18	0.35
115	10994	0.5	225.9	10948.02	481.11	-475.57	-464.4	0.54
116	11089	0.6	212.9	11043.02	480.41	-476.14	-463.67	0.17
117	11184	1	200.9	11138.01	479.22	-476.71	-462.46	0.45
118	11279	0.8	200.4	11233	477.82	-477.23	-461.05	0.21
119	11374	1.1	206	11327.98	476.38	-477.87	-459.58	0.33
120	11469	2.1	212.3	11422.94	474.09	-479.2	-457.25	1.07
121	11565	3.3	228.5	11518.84	470.77	-482.2	-453.83	1.47
122	11660	3.8	230.8	11613.65	466.97	-486.69	-449.87	0.55
123	11755	3.9	232.6	11708.44	463.02	-491.7	-445.75	0.17
124	11850	3.9	235.2	11803.22	459.21	-496.92	-441.77	0.19

125	11946	3.5	244.1	11899.02	456.07	-502.23	-438.44	0.73
126	12041	3.2	248.1	11993.86	453.81	-507.3	-436.01	0.4
127	12136	3	255.6	12088.72	452.2	-512.17	-434.24	0.48
128	12214	3.1	263.3	12166.61	451.45	-516.24	-433.35	0.54
129	12326	3.5	270	12278.42	451.1	-522.67	-432.77	0.5
130	12421	3.3	268.8	12373.26	451.04	-528.3	-432.52	0.22
131	12517	3.1	260.7	12469.11	450.56	-533.63	-431.86	0.51
132	12612	4.9	247	12563.87	448.56	-539.9	-429.64	2.13
133	12707	17.5	224.3	12656.91	436.7	-553.67	-417.31	13.8
134	12802	25.3	200.5	12745.45	407.37	-570.81	-387.4	12.14
135	12897	40.7	186.9	12824.99	357.23	-581.72	-336.92	17.9
136	12992	48.3	181.4	12892.73	290.91	-586.32	-270.48	8.96
137	13088	52.5	178.1	12953.92	216.97	-585.93	-196.6	5.11
138	13183	66	171.6	13002.42	135.94	-578.3	-115.88	15.37
139	13278	74.5	167.1	13034.5	48.2	-561.7	-28.76	9.99
140	13373	89.2	164.6	13047.94	-42.72	-538.74	61.31	15.69
141	13468	89	164	13049.43	-134.17	-513.04	151.81	0.67
142	13564	89.5	165.7	13050.68	-226.82	-487.95	243.54	1.85
143	13659	89.5	166.9	13051.51	-319.11	-465.46	335	1.26
144	13754	90.2	168.9	13051.76	-411.99	-445.54	427.14	2.23
145	13850	92.1	171.9	13049.84	-506.62	-429.54	521.15	3.7
146	13945	89.2	174.5	13048.76	-600.92	-418.29	615.02	4.1
147	14040	87.7	174.4	13051.33	-695.44	-409.11	709.16	1.58
148	14135	89.4	176.7	13053.73	-790.11	-401.74	803.52	3.01
149	14231	90.7	178.7	13053.65	-886.03	-397.89	899.25	2.48
150	14326	89.8	178.7	13053.23	-981	-395.73	994.09	0.95
151	14421	90.4	181.6	13053.07	-1075.99	-395.98	1089.03	3.12
152	14516	90.2	183.1	13052.57	-1170.91	-399.88	1184.03	1.59
153	14611	90.2	184	13052.24	-1265.72	-405.76	1278.99	0.95
154	14706	89.8	180.7	13052.24	-1360.63	-409.66	1373.97	3.5
155	14802	89.9	181.6	13052.49	-1456.61	-411.58	1469.96	0.94
156	14897	89.5	181.5	13052.99	-1551.57	-414.15	1564.96	0.43
157	14986	89.5	181.9	13053.76	-1640.53	-416.79	1653.95	0.45
158	15082	89.6	182.3	13054.52	-1736.46	-420.31	1749.95	0.43
159	15177	91.2	181	13053.85	-1831.42	-423.04	1844.94	2.17
160	15272	91.5	181.7	13051.62	-1926.36	-425.28	1939.91	0.8
161	15367	90.3	179.4	13050.12	-2021.34	-426.19	2034.86	2.73
162	15463	90.6	178.8	13049.37	-2117.32	-424.69	2130.73	0.7
163	15558	90.1	178.9	13048.79	-2212.3	-422.78	2225.59	0.54
164	15653	89.8	180.4	13048.87	-2307.3	-422.2	2320.51	1.61
165	15749	89.8	181.3	13049.21	-2403.29	-423.62	2416.49	0.94
166	15844	90.1	181.1	13049.29	-2498.27	-425.61	2511.48	0.38

167	15939	89.9	181.1	13049.29	-2593.25	-427.44	2606.47	0.21
168	16034	89.6	182.1	13049.71	-2688.21	-430.09	2701.46	1.1
169	16129	89.7	180.9	13050.29	-2783.17	-432.58	2796.46	1.27
170	16224	89.6	179.9	13050.87	-2878.17	-433.24	2891.42	1.06
171	16320	88.6	178.5	13052.37	-2974.14	-431.9	2987.29	1.79
172	16415	88.8	178.8	13054.53	-3069.09	-429.66	3082.1	0.38
173	16510	90.2	178.1	13055.36	-3164.05	-427.09	3176.92	1.65
174	16605	90.1	177.5	13055.11	-3258.98	-423.44	3271.66	0.64
175	16701	89.4	176.7	13055.53	-3354.85	-418.59	3367.31	1.11
176	16796	88.6	176	13057.19	-3449.65	-412.54	3461.84	1.12
177	16891	90.2	176.4	13058.18	-3544.43	-406.25	3556.35	1.74
178	16987	92.2	178.3	13056.17	-3640.3	-401.81	3652	2.87
179	17082	92.1	177.9	13052.61	-3735.18	-398.66	3746.72	0.43
180	17177	92.4	177.9	13048.88	-3830.04	-395.18	3841.41	0.32
181	17272	92.6	178.5	13044.73	-3924.9	-392.2	3936.11	0.67
182	17368	91.1	179.5	13041.63	-4020.83	-390.53	4031.93	1.88
183	17463	91.7	180.1	13039.31	-4115.8	-390.2	4126.83	0.89
184	17558	89.7	179.2	13038.15	-4210.79	-389.61	4221.74	2.31
185	17654	89.3	178.6	13038.99	-4306.77	-387.77	4317.59	0.75
186	17749	88.8	178.4	13040.56	-4401.72	-385.29	4412.4	0.57
187	17844	87.9	177.8	13043.3	-4496.63	-382.14	4507.15	1.14
188	17939	89.6	178.9	13045.37	-4591.56	-379.4	4601.93	2.13
189	18034	89.2	178.4	13046.37	-4686.53	-377.17	4696.76	0.67
190	18130	88.9	177.9	13047.96	-4782.46	-374.07	4792.53	0.61
191	18225	90.9	178.3	13048.12	-4877.41	-370.92	4887.31	2.15
192	18320	91	178.1	13046.55	-4972.35	-367.93	4982.09	0.24
193	18415	90.8	178.5	13045.06	-5067.29	-365.12	5076.88	0.47
194	18511	90.9	178.4	13043.63	-5163.25	-362.52	5172.69	0.15
195	18606	91.1	177.6	13041.98	-5258.17	-359.2	5267.45	0.87
196	18701	89.8	178.5	13041.23	-5353.11	-355.97	5362.22	1.66
197	18796	89.5	178.1	13041.81	-5448.07	-353.15	5457.02	0.53
198	18892	89.4	177.7	13042.73	-5544	-349.64	5552.77	0.43
199	18987	90.3	180.4	13042.98	-5638.98	-348.06	5647.64	3
200	19082	89.8	181.2	13042.9	-5733.97	-349.39	5742.62	0.99
201	19177	88.9	179.4	13043.97	-5828.95	-349.88	5837.56	2.12
202	19273	89.1	179.7	13045.65	-5924.94	-349.13	5933.46	0.38
203	19368	88.5	177.2	13047.64	-6019.87	-346.56	6028.25	2.71
204	19463	88.5	177.2	13050.13	-6114.73	-341.92	6122.89	0
205	19558	88.3	178.4	13052.78	-6209.62	-338.28	6217.6	1.28
206	19653	90.2	180	13054.02	-6304.59	-336.95	6312.47	2.61
207	19749	90.5	180.1	13053.44	-6400.59	-337.04	6408.42	0.33
208	19844	90	180.3	13053.02	-6495.59	-337.37	6503.37	0.57

209	19939	89.7	180.5	13053.27	-6590.59	-338.03	6598.33	0.38
210	20035	88.5	180	13054.78	-6686.57	-338.45	6694.27	1.35
211	20130	90.2	179.7	13055.86	-6781.56	-338.2	6789.2	1.82
212	20225	89.6	179.8	13056.02	-6876.56	-337.79	6884.13	0.64
213	20320	90.3	179.9	13056.11	-6971.56	-337.54	6979.06	0.74
214	20415	90	180.6	13055.86	-7066.56	-337.95	7074.02	0.8
215	20511	89.8	180.4	13056.02	-7162.55	-338.79	7169.98	0.29
216	20606	91.6	180.2	13054.86	-7257.54	-339.29	7264.93	1.91
217	20701	91.4	180	13052.38	-7352.51	-339.45	7359.85	0.3
218	20796	91.8	180.4	13049.72	-7447.47	-339.78	7454.76	0.6
219	20891	91.2	179.9	13047.24	-7542.44	-340.03	7549.68	0.82
220	20986	90.4	178.9	13045.91	-7637.42	-339.04	7644.58	1.35
221	21082	90.3	179.3	13045.32	-7733.41	-337.53	7740.45	0.43
222	21177	89.8	178.8	13045.24	-7828.39	-335.95	7835.33	0.74
223	21272	89.1	178.8	13046.15	-7923.37	-333.97	7930.18	0.74
224	21367	89.1	178	13047.65	-8018.32	-331.31	8024.98	0.84
225	21462	88.9	178.2	13049.3	-8113.25	-328.16	8119.75	0.3
226	21557	88.5	178.7	13051.46	-8208.19	-325.6	8214.54	0.67
227	21652	88.8	179.5	13053.7	-8303.15	-324.1	8309.39	0.9
228	21748	88.8	179.6	13055.71	-8399.13	-323.35	8405.29	0.1
229	21843	89	180.2	13057.53	-8494.11	-323.18	8500.21	0.67
230	21938	89	180.4	13059.19	-8589.09	-323.68	8595.15	0.21
231	22033	89.1	181	13060.76	-8684.07	-324.84	8690.11	0.64
232	22129	87.3	179.1	13063.78	-8780.02	-324.93	8786	2.73
233	22224	86.6	178.7	13068.83	-8874.87	-323.1	8880.73	0.85
234	22319	86.8	178.1	13074.3	-8969.67	-320.46	8975.39	0.66
235	22414	87.9	177.8	13078.7	-9064.51	-317.06	9070.05	1.2
236	22509	89.5	177.9	13080.85	-9159.41	-313.5	9164.78	1.69
237	22604	88.1	177.2	13082.84	-9254.3	-309.44	9259.47	1.65
238	22699	87.4	177.1	13086.57	-9349.11	-304.72	9354.06	0.74
239	22794	85.9	176	13092.12	-9443.77	-299.01	9448.46	1.96
240	22874	86.3	176.4	13097.56	-9523.41	-293.72	9527.87	0.71
PTB	22928	86.3	176.4	13101.05	-9577.19	-290.34	9581.51	0