



MWD SURVEY CERTIFICATION
Legacy Directional Drilling, LLC.

RECEIVED

AUG 31 2018

DISTRICT II-ARTESIA O.C.D.

State Of New Mexico

County Of Eddy

30-015-44425

I, Mark L. Miller certify that; I am employed by Legacy Directional Drilling, LLC.;
that I did on the day(s) of December 1, 2017 through January 29, 2018 conduct
or supervise the taking of a MWD survey from a depth of 144 feet to a depth of
21,785 feet; that the data is true, correct, complete and within the limitations of the
tool set forth by Legacy Directional Drilling, LLC.; that I am authorized and qualified to make this report;
that this survey was conducted at the request of Devon Energy for the
Lusitano 27-34 FED COM 336H Well, A.P.I. No. 30-015-44425 in
Jennings; Bone Spring, West Field and that I have reviewed this report and find that
it conforms to the principles and procedures set forth by Legacy Directional Drilling, LLC.

Surveyor's Signature

MLWD Technical Director

Title



Directional Survey Report

Company Name: DEVON ENERGY

State/Prov: New Mexico

Survey Company: LEGACY DIRECTIONAL

Proposed Azimuth: 179.85

Well Name: LUSITANO 27-34 FED COM 336H

County: Eddy County

Job Number: LF170049

Declination: 6.68

Field: JENNINGS; BONE SPRING, WEST

Location: SECTION 27 TOWNSHIP 25 S RANGE 31 E

Latitude: 32.107913

North Reference: Grid

Rig ID: INDEPENDENCE CONTRACT DRILLING 217 API/UWI: 30015444250000

Longitude: -103.758397

KB: 3362

Svy	Depth	Inc	Azm	TVD	NS	EW	VS	DLS	CL	CD	CA	Temp
Tiein	0	0	0	0	0	0	0	0	0	0	90	0
1	144	1	6.72	143.99	1.25	0.15	-1.25	0.69	144	1.26	6.72	-9999
2	203	0.80	357.72	202.99	2.17	0.19	-2.17	0.41	59	2.18	5.03	-9999
3	294	1.10	2.72	293.97	3.68	0.21	-3.68	0.34	91	3.68	3.22	-9999
4	392	0.60	13.72	391.96	5.12	0.37	-5.12	0.53	98	5.13	4.17	-9999
5	487	0.60	325.72	486.96	6.01	0.21	-6.01	0.51	95	6.01	2.01	-9999
6	551	0.50	298.72	550.95	6.42	-0.22	-6.42	0.43	64	6.43	358.02	-9999
7	583	0.60	316.72	582.95	6.61	-0.46	-6.61	0.62	32	6.63	356.02	-9999
8	773	0.60	324.72	772.94	8.15	-1.72	-8.15	0.04	190	8.33	348.10	-9999
9	867	1.10	316.72	866.93	9.21	-2.62	-9.21	0.55	94	9.57	344.12	-9999
10	962	1.40	318.72	961.91	10.74	-4.01	-10.75	0.32	95	11.47	339.53	-9999
11	995	1.52	324.42	994.90	11.40	-4.53	-11.41	0.57	33	12.27	338.33	63.40
12	1072	0.90	340.33	1071.88	12.80	-5.33	-12.81	0.91	77	13.87	337.40	63.40
13	1163	1.32	25.33	1162.87	14.42	-5.12	-14.43	1.03	91	15.30	340.45	70.60
14	1257	2.10	32.94	1256.82	16.84	-3.72	-16.85	0.86	94	17.25	347.54	70.60
15	1351	2.65	33.32	1350.74	20.11	-1.59	-20.11	0.59	94	20.17	355.48	77.70
16	1443	3.31	33.50	1442.62	24.10	1.04	-24.10	0.72	92	24.12	2.48	84.90
17	1535	4.12	36.57	1534.42	28.97	4.48	-28.96	0.91	92	29.31	8.79	84.90
18	1628	4.65	30.79	1627.15	34.89	8.40	-34.87	0.74	93	35.89	13.54	92
19	1720	5.24	31.34	1718.81	41.68	12.49	-41.65	0.64	92	43.51	16.69	92
20	1814	4.81	31.92	1812.45	48.69	16.81	-48.65	0.46	94	51.51	19.05	92
21	1909	5.33	30.42	1907.07	55.88	21.15	-55.82	0.56	95	59.75	20.73	92
22	2004	5.11	28.79	2001.68	63.39	25.42	-63.32	0.28	95	68.30	21.85	99
23	2099	4.72	27.02	2096.33	70.58	29.23	-70.50	0.44	95	76.39	22.50	99
24	2194	4.89	32.15	2191.00	77.49	33.16	-77.40	0.49	95	84.29	23.17	99
25	2289	5.83	34.27	2285.58	84.91	38.04	-84.81	1.01	95	93.04	24.13	106
26	2384	5.77	33.41	2380.09	92.88	43.38	-92.77	0.11	95	102.51	25.04	113
27	2479	5.56	34.35	2474.63	100.67	48.61	-100.54	0.24	95	111.79	25.77	113
28	2574	5.26	34.93	2569.21	108.04	53.70	-107.89	0.32	95	120.64	26.43	113
29	2669	4.88	31.14	2663.84	115.06	58.28	-114.91	0.53	95	128.98	26.86	113
30	2764	4.93	26.11	2758.49	122.19	62.17	-122.02	0.46	95	137.09	26.97	120
31	2860	4.72	24.51	2854.15	129.49	65.62	-129.31	0.26	98	145.16	26.88	120
32	2954	5.12	28.23	2947.80	136.70	69.21	-136.52	0.54	94	153.22	26.85	92
33	3049	5.68	30.82	3042.38	144.47	73.62	-144.28	0.64	95	162.15	27.00	99.10

Svy	Depth	Inc	Azm	TVD	NS	EW	VS	DLS	CL	CD	CA	Temp
34	3144	5.15	32.47	3,136.96	152.11	78.32	-151.90	0.58	95	171.09	27.24	99.10
35	3239	5.28	34.15	3,231.56	159.32	83.06	-159.10	0.21	95	179.68	27.54	106.30
36	3334	6.10	33.76	3,326.09	167.14	88.32	-166.90	0.86	95	189.04	27.85	70.60
37	3430	5.46	33.75	3,421.61	175.17	93.70	-174.93	0.67	96	198.66	28.14	92
38	3524	5.05	34.07	3,515.21	182.32	98.50	-182.06	0.44	94	207.22	28.38	92
39	3619	5.13	33.06	3,609.84	189.34	103.16	-189.07	0.13	95	215.62	28.58	99
40	3714	4.64	30.76	3,704.49	196.20	107.44	-195.92	0.56	95	223.69	28.70	99
41	3809	3.80	31.83	3,799.23	202.18	111.06	-201.89	0.89	95	230.68	28.78	106
42	3905	3.53	21.26	3,895.04	207.64	113.81	-207.34	0.76	96	236.78	28.73	106
43	4000	2.58	20.89	3,989.90	212.36	115.64	-212.06	1.00	95	241.80	28.57	106
44	4096	1.98	35.10	4,085.82	215.74	117.36	-215.43	0.85	96	245.59	28.55	113
45	4191	2.05	40.60	4,180.77	218.37	119.41	-218.06	0.22	95	248.89	28.67	106
46	4286	1.54	21.26	4,275.72	220.85	120.98	-220.53	0.83	95	251.81	28.71	113
47	4381	0.91	6.90	4,370.70	222.79	121.53	-222.47	0.73	95	253.78	28.61	113
48	4476	0.81	8.12	4,465.69	224.20	121.72	-223.88	0.11	95	255.11	28.50	113
49	4571	0.71	357.09	4,560.68	225.45	121.78	-225.13	0.19	95	256.24	28.38	113
50	4666	0.56	5.37	4,655.67	226.50	121.80	-226.18	0.18	95	257.17	28.27	120
51	4761	0.57	11.30	4,750.67	227.43	121.93	-227.11	0.06	95	258.05	28.20	120
52	4856	0.65	10.96	4,845.66	228.42	122.13	-228.10	0.08	95	259.02	28.13	120.60
53	4951	0.48	359.03	4,940.66	229.35	122.22	-229.03	0.22	95	259.88	28.05	113.40
54	5046	0.54	353.46	5,035.65	230.19	122.17	-229.87	0.08	95	260.60	27.96	120.60
55	5141	0.54	347.23	5,130.65	231.07	122.02	-230.75	0.06	95	261.31	27.84	120.60
56	5236	0.23	65.70	5,225.65	231.59	122.09	-231.27	0.57	95	261.80	27.80	120.60
57	5331	0.20	71.56	5,320.65	231.72	122.42	-231.40	0.04	95	262.07	27.85	120.60
58	5426	0.18	69.21	5,415.65	231.82	122.72	-231.50	0.02	95	262.30	27.90	120.60
59	5522	0.14	40.97	5,511.65	231.97	122.94	-231.64	0.09	96	262.53	27.92	120.60
60	5617	0.11	34.50	5,606.65	232.13	123.06	-231.81	0.03	95	262.73	27.93	120.60
61	5712	0.18	351.74	5,701.65	232.35	123.09	-232.03	0.13	95	262.94	27.91	120.60
62	5808	0.21	343.63	5,797.65	232.67	123.02	-232.35	0.04	96	263.19	27.87	120.60
63	5903	0.10	337.62	5,892.65	232.91	122.94	-232.59	0.12	95	263.37	27.83	120.60
64	5997	0.23	329.87	5,986.65	233.15	122.82	-232.83	0.14	94	263.52	27.78	120.60
65	6093	0.30	330.96	6,082.64	233.54	122.60	-233.22	0.07	96	263.76	27.70	127.70
66	6188	0.37	327.04	6,177.64	234.01	122.31	-233.69	0.08	95	264.05	27.59	120.60
67	6283	0.24	284.71	6,272.64	234.32	121.95	-234.00	0.26	95	264.16	27.49	127.70
68	6378	0.31	294.97	6,367.64	234.48	121.53	-234.16	0.09	95	264.10	27.40	127
69	6473	0.30	333.96	6,462.64	234.61	121.18	-234.49	0.21	95	264.24	27.30	99
70	6569	0.10	332.62	6,558.64	235.11	121.03	-234.80	0.21	96	264.44	27.24	106.30
71	6664	0.06	284.11	6,653.64	235.20	120.95	-234.88	0.08	95	264.47	27.21	113.40
72	6759	0.23	305.50	6,748.64	235.32	120.74	-235.00	0.18	95	264.49	27.16	113.40
73	6854	0	6.68	6,843.64	235.43	120.59	-235.12	0.24	95	264.52	27.12	120.60
74	6949	0.03	178.66	6,938.64	235.41	120.59	-235.09	0.03	95	264.50	27.12	120.60
75	7044	0.04	211.26	7,033.64	235.35	120.57	-235.04	0.02	95	264.44	27.13	127.70
76	7140	0.09	189.02	7,129.64	235.25	120.54	-234.93	0.06	96	264.34	27.13	127.70
77	7234	0.28	170.33	7,223.64	234.95	120.57	-234.64	0.21	94	264.08	27.17	127.70
78	7330	0.28	157.72	7,319.64	234.50	120.70	-234.19	0.06	96	263.74	27.24	135

Svy	Depth	Inc	Azm	TVD	NS	EW	VS	DLS	CL	CD	CA	Temp
79	7425	0.31	150.38	7,414.63	234.07	120.91	-233.75	0.05	95	263.45	27.32	135
80	7520	0.34	135.11	7,509.63	233.64	121.24	-233.32	0.10	95	263.23	27.43	142
81	7615	0.34	147.29	7,604.63	233.21	121.59	-232.89	0.08	95	263.00	27.54	142
82	7711	0.28	157.83	7,700.63	232.75	121.83	-232.43	0.09	96	262.71	27.63	142
83	7806	0.29	160.28	7,795.63	232.31	122.00	-231.99	0.02	95	262.40	27.71	134.90
84	7901	0.48	181.69	7,890.63	231.68	122.07	-231.36	0.25	95	261.88	27.78	134.90
85	7996	0.58	176.52	7,985.62	230.81	122.09	-230.49	0.12	95	261.11	27.88	142
86	8091	0.81	171.44	8,080.62	229.66	122.22	-229.34	0.25	95	260.16	28.02	142
87	8187	1	173.48	8,176.60	228.16	122.42	-227.84	0.20	98	258.92	28.22	135
88	8282	0.86	177.27	8,271.59	226.62	122.54	-226.30	0.16	95	257.63	28.40	135
89	8376	0.76	188.50	8,365.58	225.30	122.48	-224.98	0.20	94	256.44	28.53	142
90	8472	0.38	167.30	8,461.58	224.36	122.46	-224.04	0.45	98	255.61	28.63	121
91	8567	0.04	217.23	8,556.58	224.03	122.51	-223.71	0.37	95	255.34	28.67	127
92	8662	0.34	3.18	8,651.58	224.28	122.51	-223.96	0.39	95	255.56	28.64	135
93	8757	0.68	321.66	8,746.57	225.01	122.17	-224.69	0.51	95	256.03	28.50	134.90
94	8853	1.18	309.23	8,842.58	226.08	121.05	-225.76	0.56	96	256.45	28.17	142
95	8948	1.26	303.19	8,937.54	227.27	119.42	-226.95	0.16	95	256.73	27.72	142
96	9043	1.48	313.08	9,032.51	228.68	117.65	-228.37	0.34	95	257.17	27.22	149.10
97	9138	1.25	326.86	9,127.48	230.38	116.19	-230.08	0.42	95	258.02	26.76	149.10
98	9233	0.89	339.84	9,222.47	231.94	115.37	-231.64	0.45	95	259.05	26.45	142
99	9262	0.87	341.53	9,251.46	232.36	115.22	-232.06	0.11	29	259.36	26.37	149.10
100	9375	0.84	286.84	9,364.45	233.42	114.15	-233.12	0.70	113	259.84	26.06	120.60
101	9418	0.91	276.46	9,407.45	233.55	113.51	-233.25	0.40	43	259.67	25.92	120.60
102	9514	1.14	337.51	9,503.44	234.52	112.39	-234.22	1.10	96	260.06	25.61	127.70
103	9609	1.29	357.54	9,598.41	236.46	111.98	-236.16	0.47	95	261.63	25.34	134.90
104	9704	1.25	342.14	9,693.39	238.51	111.62	-238.22	0.36	95	263.34	25.08	134.90
105	9799	0.89	269.08	9,788.38	239.49	110.56	-239.20	1.37	95	263.78	24.78	142
106	9894	1.24	299.79	9,883.36	239.99	108.93	-239.70	0.69	95	263.55	24.41	142
107	9990	2.44	309.34	9,979.31	241.80	106.45	-241.52	1.29	96	264.19	23.76	142
108	10085	1.98	321.21	10,074.24	244.36	103.86	-244.09	0.68	95	265.51	23.03	149.10
109	10180	1.93	10.29	10,169.19	247.21	103.12	-246.94	1.71	95	267.86	22.64	149.10
110	10275	2.24	30.29	10,264.13	250.39	104.34	-250.11	0.83	95	271.26	22.62	149.10
111	10373	2.77	45.03	10,362.04	253.72	108.98	-253.43	0.85	98	275.35	22.86	134.90
112	10468	2.85	67.46	10,456.93	256.24	110.79	-255.95	1.15	95	279.17	23.38	134.90
113	10563	2.93	95.26	10,551.81	256.93	115.39	-256.62	1.46	95	281.65	24.19	149.10
114	10658	1.07	175.03	10,646.76	255.82	117.88	-255.51	3.09	95	281.67	24.74	149.10
115	10753	0.86	192.45	10,741.75	254.24	117.80	-253.93	0.38	95	280.21	24.86	-9999
116	10848	0.29	1.63	10,836.74	253.78	117.66	-253.48	1.21	95	279.73	24.87	-9999
117	10943	0.39	338.16	10,931.74	254.32	117.54	-254.02	0.18	95	280.17	24.81	156.30
118	11041	2.68	213.83	11,029.71	252.73	116.14	-252.43	2.98	98	278.14	24.68	142
119	11087	8.02	222.13	11,075.49	249.45	113.39	-249.16	11.70	46	274.02	24.44	142
120	11136	11.94	222.23	11,123.74	243.16	107.69	-242.88	8.00	49	265.94	23.89	149.10
121	11232	20.36	217.28	11,215.87	222.49	90.87	-222.25	8.88	98	240.33	22.22	149.10
122	11327	31.29	209.29	11,301.28	187.70	68.72	-187.52	12.05	95	199.89	20.11	156.30
123	11422	41.87	195.21	11,377.60	135.35	48.23	-135.23	14.15	95	143.69	19.61	156.30

Svy	Depth	Inc	Azm	TVD	NS	EW	VS	DLS	CL	CD	CA	Temp
124	11517	50.25	194.20	11,443.46	69.24	30.93	-69.16	8.85	95	75.83	24.07	149.10
125	11612	58.89	193.99	11,498.48	-5.77	12.10	5.80	9.10	95	13.41	115.49	156.30
126	11708	67.08	192.72	11,542.05	-88.92	-7.60	88.90	8.61	96	89.24	184.89	156.30
127	11802	72.86	187.83	11,574.25	-175.76	-23.28	175.70	7.85	94	177.29	187.54	163.40
128	11897	74.52	185.99	11,600.93	-266.27	-34.24	266.18	2.55	95	268.46	187.33	163.40
129	11992	83.31	184.09	11,619.18	-359.04	-42.40	358.93	9.46	95	361.53	186.73	163.40
130	12071	89.92	183.19	11,623.84	-437.70	-47.40	437.57	8.44	79	440.26	186.18	163.40
131	12108	91.15	183.11	11,623.49	-474.64	-49.43	474.51	3.33	37	477.21	185.95	149.10
132	12203	90.42	183.14	11,622.19	-569.49	-54.61	569.34	0.77	95	572.10	185.48	149.10
133	12298	90.81	183.02	11,621.17	-664.35	-59.71	664.19	0.43	95	667.02	185.14	156.30
134	12393	90.11	181.59	11,620.41	-759.26	-63.53	759.09	1.68	95	761.92	184.78	156.30
135	12487	89.47	180.41	11,620.75	-853.25	-65.17	853.07	1.43	94	855.73	184.37	156.30
136	12582	89.10	178.13	11,621.94	-948.22	-63.96	948.05	2.43	95	950.38	183.86	156.30
137	12676	89.33	178.43	11,623.23	-1,042.17	-61.14	1,042.01	0.40	94	1,043.97	183.36	156.30
138	12771	88.79	178.12	11,624.79	-1,137.12	-58.28	1,136.96	0.66	95	1,138.61	182.93	163.40
139	12866	90.06	177.84	11,625.74	-1,232.05	-54.94	1,231.90	1.37	95	1,233.28	182.55	163.40
140	12961	90.65	178.03	11,625.15	-1,326.99	-51.51	1,326.85	0.65	95	1,327.99	182.22	163.40
141	13056	90.78	179.41	11,623.97	-1,421.95	-49.39	1,421.82	1.46	95	1,422.81	181.99	163.40
142	13151	91.32	179.51	11,622.22	-1,516.93	-48.50	1,516.80	0.58	95	1,517.71	181.83	170.60
143	13245	91.63	180.85	11,619.81	-1,610.90	-48.79	1,610.77	1.46	94	1,611.84	181.73	163.40
144	13340	89.66	181.22	11,618.74	-1,705.87	-50.51	1,705.74	2.11	95	1,706.62	181.70	170.60
145	13435	89.97	181.49	11,619.04	-1,800.85	-52.75	1,800.70	0.43	95	1,801.62	181.68	170.60
146	13530	90.14	182.16	11,618.95	-1,895.80	-55.78	1,895.64	0.73	95	1,896.62	181.69	170.60
147	13625	90.36	182.53	11,618.54	-1,990.72	-59.67	1,990.55	0.45	95	1,991.61	181.72	177.70
148	13719	89.27	181.39	11,618.84	-2,084.66	-62.88	2,084.49	1.68	94	2,085.61	181.73	170.60
149	13814	89.33	179.99	11,620.00	-2,179.64	-64.02	2,179.47	1.47	95	2,180.58	181.68	170.60
150	13909	89.33	180	11,621.11	-2,274.64	-64.02	2,274.46	0.01	95	2,275.54	181.61	170.60
151	14004	90.73	179.81	11,621.06	-2,369.63	-63.86	2,369.46	1.49	95	2,370.49	181.54	170.60
152	14098	91.23	180.34	11,619.45	-2,463.62	-63.98	2,463.44	0.78	94	2,464.45	181.49	177.70
153	14193	91.79	180.13	11,616.95	-2,558.58	-64.37	2,558.41	0.63	95	2,559.39	181.44	177.70
154	14288	90.59	178.85	11,614.98	-2,653.56	-63.53	2,653.38	1.85	95	2,654.32	181.37	177.70
155	14383	90.90	178.80	11,613.74	-2,748.53	-61.58	2,748.36	0.33	95	2,749.22	181.28	177.70
156	14477	90.48	179.17	11,612.61	-2,842.51	-59.91	2,842.34	0.60	94	2,843.14	181.21	177.70
157	14572	90.45	179.30	11,611.84	-2,937.49	-58.64	2,937.33	0.14	95	2,938.08	181.14	177.70
158	14667	88.43	179.27	11,612.77	-3,032.48	-57.46	3,032.32	2.13	95	3,033.02	181.09	177.70
159	14762	88.49	178.97	11,615.32	-3,127.43	-56.00	3,127.27	0.32	95	3,127.93	181.03	177.70
160	14856	88.57	178.84	11,617.73	-3,221.38	-54.20	3,221.23	0.16	94	3,221.84	180.96	177.70
161	14951	88.54	179.04	11,620.13	-3,316.34	-52.45	3,316.19	0.21	95	3,316.75	180.91	184.90
162	15045	88.77	178.59	11,622.33	-3,410.29	-50.50	3,410.15	0.54	94	3,410.66	180.85	184.90
163	15140	89.41	179.81	11,623.84	-3,505.27	-49.18	3,505.13	1.45	95	3,505.61	180.80	184.90
164	15235	90.14	180.59	11,624.22	-3,600.26	-49.51	3,600.12	1.12	95	3,600.61	180.79	184.90
165	15330	89.36	180.12	11,624.63	-3,695.26	-50.10	3,695.12	0.96	95	3,695.60	180.78	184.90
166	15425	89.41	179.77	11,625.65	-3,790.26	-50.01	3,790.11	0.37	95	3,790.59	180.76	184.90
167	15520	90.92	180.29	11,625.38	-3,885.25	-50.06	3,885.11	1.68	95	3,885.57	180.74	184.90
168	15614	91.63	181.60	11,623.29	-3,979.21	-51.61	3,979.06	1.58	94	3,979.55	180.74	184.90

Svy	Depth	Inc	Azm	TVD	NS	EW	VS	DLS	CL	CD	CA	Temp
169	15709	91.99	182.41	11,620.29	-4,074.11	-54.93	4,073.95	0.93	95	4,074.48	180.77	177.70
170	15804	90.36	181.92	11,618.34	-4,189.02	-58.52	4,168.85	1.79	95	4,169.43	180.80	184.90
171	15899	89.30	180.14	11,618.62	-4,263.99	-60.22	4,263.82	2.18	95	4,264.42	180.81	192
172	15994	88.37	179.47	11,620.55	-4,358.97	-59.90	4,358.80	1.21	95	4,359.38	180.79	192
173	16089	90.20	180.35	11,621.74	-4,453.96	-59.75	4,453.79	2.14	95	4,454.36	180.77	192
174	16183	89.89	178.92	11,621.68	-4,547.96	-59.15	4,547.79	1.56	94	4,548.34	180.75	192
175	16278	89.24	178.23	11,622.38	-4,642.92	-56.79	4,642.76	1.00	95	4,643.27	180.70	199.10
176	16373	90.67	179.75	11,622.46	-4,737.90	-55.12	4,737.74	2.20	95	4,738.22	180.67	199.10
177	16468	88.91	179	11,622.81	-4,832.89	-54.08	4,832.73	2.01	95	4,833.19	180.64	199.10
178	16562	89.27	180.77	11,624.30	-4,926.88	-53.89	4,926.72	1.92	94	4,927.17	180.63	199.10
179	16657	91.29	179.98	11,623.83	-5,021.87	-54.51	5,021.71	2.28	95	5,022.16	180.62	192
180	16753	91.99	179.25	11,621.09	-5,117.82	-53.87	5,117.67	1.05	96	5,118.11	180.60	199.10
181	16847	91.99	179.66	11,617.82	-5,211.76	-52.97	5,211.61	0.44	94	5,212.03	180.58	199.10
182	16942	91.23	179.81	11,615.15	-5,306.72	-52.54	5,306.57	0.82	95	5,306.98	180.57	199.10
183	17036	92.86	180.97	11,611.80	-5,400.66	-53.17	5,400.50	2.13	94	5,400.92	180.56	199.10
184	17131	90.98	180.33	11,608.62	-5,495.59	-54.25	5,495.43	2.09	95	5,495.86	180.57	206.30
185	17226	90.98	180.84	11,606.99	-5,590.57	-55.22	5,590.41	0.54	95	5,590.85	180.57	206.30
186	17320	92.66	183.02	11,604.01	-5,684.46	-58.38	5,684.29	2.93	94	5,684.76	180.59	192
187	17415	92.75	182.07	11,599.52	-5,779.26	-62.60	5,779.08	1.00	95	5,779.60	180.62	199.10
188	17510	91.54	179.25	11,595.97	-5,874.18	-63.69	5,873.99	3.23	95	5,874.52	180.62	206.30
189	17604	91.09	178.80	11,593.81	-5,968.14	-62.09	5,967.96	0.68	94	5,968.46	180.60	206.30
190	17699	91.35	179.84	11,591.79	-6,063.11	-60.96	6,062.93	1.13	95	6,063.42	180.58	206.30
191	17794	89.16	180.32	11,591.36	-6,158.10	-61.10	6,157.92	2.36	95	6,158.41	180.57	206.30
192	17889	88.85	180.92	11,593.01	-6,253.08	-62.12	6,252.90	0.71	95	6,253.39	180.57	206.30
193	17985	90.67	180.74	11,593.42	-6,349.07	-63.51	6,348.88	1.91	96	6,349.39	180.57	192
194	18080	92.04	179.54	11,591.17	-6,444.04	-63.75	6,443.85	1.92	95	6,444.35	180.57	192
195	18175	92.13	177.20	11,587.71	-6,538.93	-61.05	6,538.75	2.46	95	6,539.21	180.53	199.10
196	18269	89.61	176.41	11,586.29	-6,632.76	-55.81	6,632.60	2.81	94	6,633.00	180.48	199.10
197	18364	89.30	177.13	11,587.19	-6,727.61	-50.46	6,727.45	0.83	95	6,727.80	180.43	199.10
198	18459	91.71	177.98	11,586.35	-6,822.51	-46.40	6,822.37	2.69	95	6,822.67	180.39	199.10
199	18554	90.67	178.75	11,584.38	-6,917.45	-43.69	6,917.31	1.36	95	6,917.59	180.36	199.10
200	18649	91.68	180.23	11,582.43	-7,012.42	-42.85	7,012.29	1.89	95	7,012.55	180.35	206.30
201	18744	91.71	181.04	11,579.62	-7,107.37	-43.90	7,107.23	0.85	95	7,107.51	180.35	206.30
202	18839	93.28	180.59	11,575.49	-7,202.27	-45.25	7,202.13	1.72	95	7,202.41	180.36	206.30
203	18933	92.86	180.93	11,570.61	-7,296.14	-46.50	7,295.99	0.75	94	7,296.28	180.37	206.30
204	19029	93.28	178.83	11,565.64	-7,392.00	-46.30	7,391.85	2.28	96	7,392.15	180.36	206.30
205	19124	93.16	179.35	11,560.30	-7,486.84	-44.79	7,486.69	0.56	95	7,486.97	180.34	206.30
206	19219	90.45	177.08	11,557.31	-7,581.73	-41.83	7,581.59	3.72	95	7,581.84	180.32	206.30
207	19314	89.89	176.04	11,557.03	-7,676.56	-36.13	7,676.44	1.24	95	7,676.64	180.27	206.30
208	19409	91.12	177.90	11,556.19	-7,771.41	-31.11	7,771.31	2.35	95	7,771.48	180.23	206.30
209	19504	89.89	177.69	11,555.35	-7,866.34	-27.45	7,866.24	1.31	95	7,866.39	180.20	206.30
210	19599	91.18	178.96	11,554.47	-7,961.29	-24.68	7,961.20	1.91	95	7,961.33	180.18	199.10
211	19694	91.21	179.59	11,552.49	-8,056.26	-23.48	8,056.17	0.66	95	8,056.29	180.17	206.30
212	19789	89.80	178.77	11,551.65	-8,151.24	-22.12	8,151.16	1.72	95	8,151.27	180.16	206.30
213	19883	90.48	180.72	11,551.42	-8,245.24	-21.70	8,245.15	2.20	94	8,245.27	180.15	206.30

Svy	Depth	Inc	Azm	TVD	NS	EW	VS	DLS	CL	CD	CA	Temp
214	19978	91.77	181.46	11,549.55	-8,340.20	-23.50	8,340.11	1.57	95	8,340.23	180.16	206.30
215	20073	91.71	182.02	11,546.87	-8,435.11	-26.39	8,435.01	0.59	95	8,435.15	180.18	213.40
216	20168	90.64	180.36	11,544.72	-8,530.07	-28.36	8,529.96	2.08	95	8,530.11	180.19	206.30
217	20263	89.72	180.19	11,544.42	-8,625.06	-28.82	8,624.96	0.98	95	8,625.11	180.19	213.40
218	20358	90.03	181.71	11,544.63	-8,720.05	-30.39	8,719.94	1.63	95	8,720.10	180.20	206.30
219	20453	89.78	182.87	11,544.79	-8,814.97	-34.19	8,814.85	1.25	95	8,815.04	180.22	206.30
220	20548	91.54	182.07	11,543.69	-8,909.87	-38.28	8,909.74	2.04	95	8,909.95	180.25	206.30
221	20643	92.10	180.79	11,540.68	-9,004.79	-40.65	9,004.65	1.47	95	9,004.88	180.26	206.30
222	20738	91.96	181.08	11,537.31	-9,099.72	-42.20	9,099.58	0.34	95	9,099.82	180.27	213.40
223	20833	89.83	178	11,535.83	-9,194.69	-41.44	9,194.55	3.94	95	9,194.78	180.26	213.40
224	20928	89.80	178.52	11,536.13	-9,289.64	-38.55	9,289.51	0.55	95	9,289.72	180.24	213.40
225	21023	91.26	179.29	11,535.26	-9,384.62	-36.74	9,384.49	1.74	95	9,384.69	180.22	213.40
226	21117	89.36	179.69	11,534.75	-9,478.61	-35.90	9,478.48	2.07	94	9,478.68	180.22	213.40
227	21212	90.22	180.42	11,535.09	-9,573.61	-35.99	9,573.48	1.19	95	9,573.67	180.22	213.40
228	21307	90.53	181.36	11,534.47	-9,668.59	-37.47	9,668.46	1.04	95	9,668.66	180.22	206.30
229	21402	91.40	180.92	11,532.87	-9,763.56	-39.36	9,763.42	1.03	95	9,763.64	180.23	213.40
230	21497	93.06	180.70	11,529.18	-9,858.47	-40.70	9,858.33	1.76	95	9,858.56	180.24	213.40
231	21593	92.77	180.49	11,524.29	-9,954.34	-41.69	9,954.20	0.37	96	9,954.43	180.24	213.40
232	21688	93.20	180.93	11,519.35	-10,049.21	-42.87	10,049.06	0.65	95	10,049.30	180.24	213.40
233	21730	93.58	181.52	11,516.86	-10,091.12	-43.77	10,090.97	1.67	42	10,091.22	180.25	213.40
PTB	21785	93.58	181.52	11,513.43	-10,146.00	-45.22	10,145.84	0	55	10,146.10	180.26	0



Company: Devon Energy
Field: Eddy County, New Mexico (NAD 83)
Location: Lusitano 27-34 FED COM
Well: 336H
OH

Plan: Plan 6
GL 3336 + 25' KB @ 3362.00usft (ICD 217)



Azimuths to Grid North
True North: -0.31°
Magnetic North: 6.68°
Magnetic Field
Strength: 47809.4nT
Dip Angle: 59.92°
Date: 11/8/2017
Model: IGRF2015



To convert a Magnetic Direction to a Grid Direction, Add 6.68°
To convert a True Direction to a Grid Direction, Subtract 0.31°

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Oleg	TFace	V-Set	Annotation
1	15045.00	88.77	178.59	11822.33	-3410.29	-50.50	0.00	0.00	3410.15	Tie into Survey at 15045'
2	15104.00	88.77	178.59	11823.60	-3469.26	-49.05	0.00	0.00	3469.12	Start DLS 1.50 TFO 38.0'
3	15234.67	90.31	178.80	11824.65	-3589.80	-47.22	1.50	38.08	3589.77	90.31' at 15234.50 MD
4	16634.82	90.31	178.80	11817.00	-5000.13	-42.30	0.00	0.00	5000.00	Midpoint Start DLS 1.50'
5	16690.54	91.15	178.85	11816.29	-5055.74	-42.13	1.50	3.28	5055.82	91.15' at 16690.57 MD
6	21655.80	91.15	178.85	11517.00	-10019.89	-28.84	0.00	0.00	10019.88	TD at 21655.80

PROJECT DETAILS Eddy County, New Mexico (NAD 83)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

WELL DETAILS 336H

+N-S	+E-W	Northing	Easting	Latitude	Longitude
0.00	0.00	403469.96	719353.02	32.107913	-103.758397

FTP: 11714.90°MD / 11544.71°TVD
330' FNL / 333.90' FEL
Y=403374.83 X=719344.04
Lat 32.107652 Long -103.758428

KOP: 11041°MD / 11029.71°TVD
-16.97°FNL / 208.85°FEL
Y=403722.69 X=719469.16
Lat:32.108606 Long:-103.758018

LTP: 21659.00°MD / 11520.93°TVD
330' FSL / 394.11°FEL
Y=393449.71 X=719310.61
Lat 32.080370 Long -103.758707

LTP at 21659°MD / 11520.93°TVD

Last Survey 21730°MD / 11516.86°TVD

PTB - 21785°MD / 11513.43°TVD

PTB - 21785°MD / 11513.43°TVD

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