

DRILTECH MWD SURVEY REPORT

HOBBS OCD

SEP 06 2016

RECEIVED

Calculation Method Minimum Curvature



Company: EOG Resources, Inc.
Well: Rattlesnake 21 Fed Com #702H
Location: Lea Co., NM.
Rig: H&P 415

Job Number: M-2015-125-EODT-NM
Vertical Section Plane: 181.15
WELL API #: 30-025-42828
Tie Into: Surface

Survey #	Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
								N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
Tie In	Surf	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	199.00	1.60	99.50	199	198.97	0.40	0.46	S 2.74 E	2.78	99.50	0.80	0.80	50.00
2	MWD	309.00	1.60	98.70	110	308.93	0.83	0.94	S 5.77 E	5.85	99.29	0.02	0.00	-0.73
3	MWD	434.00	1.40	59.10	125	433.89	0.25	0.42	S 8.81 E	8.82	92.76	0.83	-0.16	-31.68
4	MWD	616.00	1.90	233.70	182	615.86	0.90	1.07	S 8.28 E	8.35	97.35	1.81	0.27	95.93
5	MWD	707.00	2.80	236.30	91	706.79	3.09	3.20	S 5.22 E	6.12	121.47	1.00	0.99	2.86
6	MWD	802.00	2.60	237.00	95	801.68	5.63	5.66	S 1.48 E	5.85	165.32	0.21	-0.21	0.74
7	MWD	852.00	2.50	237.70	50	851.63	6.86	6.86	S 0.39 W	6.87	183.26	0.21	-0.20	1.40
8	MWD	992.00	2.10	237.00	140	991.52	9.99	9.89	S 5.12 W	11.13	207.40	0.29	-0.29	-0.50
9	MWD	1086.00	2.10	235.90	94	1085.46	11.95	11.79	S 7.99 W	14.24	214.14	0.04	0.00	-1.17
10	MWD	1181.00	2.10	229.60	95	1180.39	14.11	13.89	S 10.76 W	17.57	217.76	0.24	0.00	-6.63
11	MWD	1275.00	1.40	282.50	94	1274.35	15.02	14.76	S 13.19 W	19.80	221.79	1.79	-0.74	56.28
12	MWD	1369.00	1.60	300.40	94	1368.32	14.15	13.85	S 15.45 W	20.74	228.12	0.54	0.21	19.04
13	MWD	1463.00	1.60	299.50	94	1462.28	12.89	12.54	S 17.72 W	21.71	234.72	0.03	0.00	-0.96
14	MWD	1558.00	1.40	295.90	95	1557.25	11.77	11.38	S 19.92 W	22.94	240.27	0.23	-0.21	-3.79
15	MWD	1746.00	1.60	293.40	188	1745.19	9.82	9.33	S 24.39 W	26.12	249.07	0.11	0.11	-1.33
16	MWD	1840.00	1.60	287.80	94	1839.15	8.95	8.41	S 26.85 W	28.13	252.61	0.17	0.00	-5.96
17	MWD	1935.00	1.90	285.50	95	1934.11	8.18	7.58	S 29.63 W	30.58	255.64	0.32	0.32	-2.42
18	MWD	2029.00	1.90	285.80	94	2028.05	7.40	6.74	S 32.63 W	33.32	258.32	0.01	0.00	0.32
19	MWD	2123.00	2.10	277.40	94	2122.00	6.81	6.10	S 35.84 W	36.35	260.35	0.38	0.21	-8.94
20	MWD	2217.00	1.90	277.00	94	2215.94	6.47	5.68	S 39.09 W	39.50	261.73	0.21	-0.21	-0.43
21	MWD	2312.00	1.80	279.20	95	2310.89	6.10	5.25	S 42.13 W	42.45	262.89	0.13	-0.11	2.32
22	MWD	2406.00	1.60	282.50	94	2404.85	5.63	4.73	S 44.87 W	45.11	263.98	0.24	-0.21	3.51
23	MWD	2501.00	1.40	281.30	95	2499.82	5.17	4.22	S 47.30 W	47.49	264.90	0.21	-0.21	-1.26
24	MWD	2595.00	1.40	278.30	94	2593.79	4.82	3.83	S 49.56 W	49.71	265.58	0.08	0.00	-3.19
25	MWD	2690.00	1.20	282.50	95	2688.76	4.48	3.45	S 51.68 W	51.79	266.19	0.23	-0.21	4.42
26	MWD	2784.00	0.90	273.20	94	2782.75	4.26	3.19	S 53.38 W	53.47	266.58	0.37	-0.32	-9.89
27	MWD	2879.00	0.50	262.50	95	2877.74	4.30	3.20	S 54.53 W	54.63	266.64	0.44	-0.42	-11.26
28	MWD	2974.00	0.70	264.40	95	2972.74	4.43	3.31	S 55.52 W	55.62	266.58	0.21	0.21	2.00
29	MWD	3068.00	0.70	235.00	94	3066.73	4.83	3.70	S 56.56 W	56.69	266.26	0.38	0.00	-31.28
30	MWD	3163.00	0.40	226.40	95	3161.72	5.41	4.26	S 57.28 W	57.44	265.74	0.33	-0.32	-9.05
31	MWD	3258.00	0.50	202.70	95	3256.72	6.03	4.87	S 57.68 W	57.89	265.17	0.22	0.11	-24.95
32	MWD	3352.00	0.50	196.20	94	3350.72	6.81	5.65	S 57.95 W	58.23	264.44	0.06	0.00	-6.91
33	MWD	3447.00	0.50	189.50	95	3445.71	7.62	6.45	S 58.14 W	58.49	263.67	0.06	0.00	-7.05
34	MWD	3542.00	0.70	330.00	95	3540.71	7.53	6.36	S 58.50 W	58.84	263.80	1.19	0.21	147.89
35	MWD	3731.00	2.60	64.30	189	3729.64	4.61	3.50	S 55.21 W	55.32	266.37	1.45	1.01	-140.58
36	MWD	3825.00	1.20	37.10	94	3823.59	2.85	1.79	S 52.69 W	52.72	268.06	1.73	-1.49	-28.94
37	MWD	3920.00	0.90	325.90	95	3918.58	1.43	0.38	S 52.51 W	52.51	269.59	1.31	-0.32	304.00



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								N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
38	MWD	4014.00	0.90	303.60	94	4012.57	0.43	0.64	N 53.54	W 53.54	270.69	0.37	0.00	-23.72
39	MWD	4109.00	0.20	288.30	95	4107.56	-0.02	1.11	N 54.32	W 54.33	271.17	0.75	-0.74	-16.11
40	MWD	4203.00	0.20	78.90	94	4201.56	-0.10	1.19	N 54.31	W 54.33	271.26	0.41	0.00	-222.77
41	MWD	4392.00	1.80	103.40	189	4390.53	0.46	0.57	N 51.10	W 51.11	270.63	0.86	0.85	12.96
42	MWD	4486.00	0.40	355.60	94	4484.51	0.45	0.55	N 49.69	W 49.70	270.63	2.08	-1.49	268.30
43	MWD	4581.00	1.10	109.00	95	4579.51	0.40	0.58	N 48.86	W 48.86	270.69	1.38	0.74	-259.58
44	MWD	4675.00	0.40	173.30	94	4673.50	1.00	0.04	S 47.96	W 47.96	269.96	1.06	-0.74	68.40
45	MWD	4770.00	0.20	285.10	95	4768.50	1.29	0.32	S 48.09	W 48.09	269.62	0.54	-0.21	117.68
46	MWD	4958.00	0.20	325.60	188	4956.50	0.94	0.03	N 48.59	W 48.59	270.04	0.07	0.00	21.54
47	MWD	5053.00	0.20	349.50	95	5051.50	0.64	0.33	N 48.71	W 48.71	270.39	0.09	0.00	25.16
48	MWD	5147.00	1.40	306.90	94	5145.49	-0.19	1.19	N 49.66	W 49.67	271.37	1.34	1.28	-45.32
49	MWD	5242.00	2.60	298.50	95	5240.43	-1.86	2.91	N 52.48	W 52.56	273.17	1.30	1.26	-8.84
50	MWD	5337.00	2.80	290.80	95	5335.32	-3.63	4.76	N 56.54	W 56.74	274.81	0.44	0.21	-8.11
51	MWD	5431.00	4.00	310.60	94	5429.16	-6.48	7.71	N 61.18	W 61.66	277.18	1.77	1.28	21.06
52	MWD	5525.00	4.00	314.10	94	5522.93	-10.80	12.13	N 66.02	W 67.13	280.41	0.26	0.00	3.72
53	MWD	5620.00	4.00	315.20	95	5617.70	-15.36	16.78	N 70.74	W 72.70	283.35	0.08	0.00	1.16
54	MWD	5714.00	4.00	284.80	94	5711.48	-18.41	19.95	N 76.22	W 78.79	284.67	2.23	0.00	-32.34
55	MWD	5808.00	4.00	276.70	94	5805.25	-19.51	21.17	N 82.64	W 85.31	284.37	0.60	0.00	-8.62
56	MWD	5996.00	3.50	278.60	188	5992.85	-20.88	22.79	N 94.83	W 97.53	283.51	0.27	-0.27	1.01
57	MWD	6091.00	3.30	276.30	95	6087.68	-21.50	23.52	N 100.42	W 103.13	283.19	0.25	-0.21	-2.42
58	MWD	6185.00	3.00	271.40	94	6181.54	-21.76	23.88	N 105.56	W 108.23	282.75	0.43	-0.32	-5.21
59	MWD	6279.00	2.60	273.90	94	6275.43	-21.87	24.09	N 110.15	W 112.75	282.33	0.44	-0.43	2.66
60	MWD	6373.00	4.40	281.60	94	6369.25	-22.63	24.96	N 115.81	W 118.47	282.16	1.97	1.91	8.19
61	MWD	6468.00	4.80	285.80	95	6463.94	-24.29	26.77	N 123.20	W 126.08	282.26	0.55	0.42	4.42
62	MWD	6562.00	4.60	272.10	94	6557.63	-25.35	27.98	N 130.76	W 133.72	282.08	1.21	-0.21	-14.57
63	MWD	6657.00	4.80	269.10	95	6652.31	-25.27	28.06	N 138.54	W 141.35	281.45	0.33	0.21	-3.16
64	MWD	6751.00	4.60	270.20	94	6745.99	-25.07	28.01	N 146.24	W 148.90	280.84	0.23	-0.21	1.17
65	MWD	6845.00	3.90	269.70	94	6839.73	-24.93	28.01	N 153.20	W 155.74	280.36	0.75	-0.74	-0.53
66	MWD	6939.00	3.50	268.80	94	6933.54	-24.73	27.93	N 159.27	W 161.70	279.95	0.43	-0.43	-0.96
67	MWD	7033.00	3.30	266.80	94	7027.37	-24.40	27.72	N 164.84	W 167.15	279.55	0.25	-0.21	-2.13
68	MWD	7222.00	2.60	265.30	189	7216.12	-23.55	27.06	N 174.54	W 176.63	278.81	0.37	-0.37	-0.79
69	MWD	7316.00	2.60	270.70	94	7310.02	-23.32	26.91	N 178.80	W 180.82	278.56	0.26	0.00	5.74
70	MWD	7410.00	0.70	262.80	94	7403.98	-23.22	26.87	N 181.50	W 183.48	278.42	2.03	-2.02	-8.40
71	MWD	7505.00	0.70	260.20	95	7498.97	-23.03	26.70	N 182.65	W 184.59	278.32	0.03	0.00	-2.74
72	MWD	7599.00	0.90	264.70	94	7592.96	-22.83	26.53	N 183.95	W 185.85	278.21	0.22	0.21	4.79
73	MWD	7694.00	0.70	251.70	95	7687.95	-22.56	26.28	N 185.24	W 187.10	278.07	0.28	-0.21	-13.68
74	MWD	7788.00	1.20	254.40	94	7781.94	-22.08	25.84	N 186.74	W 188.52	277.88	0.53	0.53	2.87
75	MWD	7882.00	1.20	238.40	94	7875.92	-21.27	25.05	N 188.52	W 190.18	277.57	0.36	0.00	-17.02
76	MWD	7977.00	1.20	257.00	95	7970.90	-20.48	24.31	N 190.34	W 191.89	277.28	0.41	0.00	19.58
77	MWD	8071.00	0.70	256.30	94	8064.89	-20.10	23.95	N 191.86	W 193.35	277.12	0.53	-0.53	-0.74



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								N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
78	MWD	8165.00	0.90	263.00	94	8158.88	-19.85	23.73	N 193.15 W	194.60	277.00	0.23	0.21	7.13
79	MWD	8260.00	0.90	253.80	95	8253.87	-19.52	23.43	N 194.61 W	196.01	276.86	0.15	0.00	-9.68
80	MWD	8355.00	0.50	240.00	95	8348.86	-19.08	23.01	N 195.68 W	197.03	276.71	0.45	-0.42	-14.53
81	MWD	8449.00	0.50	247.00	94	8442.86	-18.70	22.65	N 196.41 W	197.72	276.58	0.06	0.00	7.45
82	MWD	8544.00	0.70	199.90	95	8537.85	-17.98	21.94	N 196.99 W	198.21	276.35	0.54	0.21	-49.58
83	MWD	8638.00	0.40	219.20	94	8631.85	-17.18	21.14	N 197.40 W	198.53	276.11	0.37	-0.32	20.53
84	MWD	8733.00	0.50	190.70	95	8726.84	-16.51	20.48	N 197.68 W	198.74	275.91	0.25	0.11	-30.00
85	MWD	8827.00	0.70	220.80	94	8820.84	-15.66	19.64	N 198.13 W	199.10	275.66	0.39	0.21	32.02
86	MWD	8922.00	0.50	238.20	95	8915.83	-14.99	18.98	N 198.87 W	199.77	275.45	0.28	-0.21	18.32
87	MWD	9016.00	0.90	210.10	94	9009.83	-14.12	18.13	N 199.58 W	200.41	275.19	0.55	0.43	-29.89
88	MWD	9111.00	0.50	249.60	95	9104.82	-13.32	17.34	N 200.35 W	201.10	274.95	0.64	-0.42	41.58
89	MWD	9205.00	0.70	214.10	94	9198.81	-12.68	16.72	N 201.05 W	201.75	274.75	0.44	0.21	-37.77
90	MWD	9299.00	0.50	244.50	94	9292.81	-12.02	16.07	N 201.75 W	202.38	274.55	0.39	-0.21	32.34
91	MWD	9394.00	1.10	233.30	95	9387.80	-11.27	15.35	N 202.85 W	203.43	274.33	0.65	0.63	-11.79
92	MWD	9488.00	0.90	247.30	94	9481.79	-10.42	14.52	N 204.25 W	204.77	274.07	0.33	-0.21	14.89
93	MWD	9583.00	1.10	219.40	95	9576.77	-9.40	13.53	N 205.52 W	205.97	273.77	0.55	0.21	-29.37
94	MWD	9677.00	1.20	227.80	94	9670.75	-8.02	12.17	N 206.82 W	207.18	273.37	0.21	0.11	8.94
95	MWD	9771.00	1.60	235.00	94	9764.72	-6.57	10.76	N 208.63 W	208.91	272.95	0.46	0.43	7.66
96	MWD	9866.00	1.60	231.20	95	9859.69	-4.93	9.17	N 210.75 W	210.95	272.49	0.11	0.00	-4.00
97	MWD	9960.00	1.80	218.30	94	9953.65	-2.91	7.18	N 212.69 W	212.81	271.93	0.46	0.21	-13.72
98	MWD	10054.00	0.50	354.60	94	10047.63	-2.15	6.43	N 213.64 W	213.74	271.73	2.33	-1.38	145.00
99	MWD	10149.00	0.70	339.40	95	10142.63	-3.10	7.39	N 213.88 W	214.01	271.98	0.27	0.21	-16.00
100	MWD	10243.00	0.70	337.00	94	10236.62	-4.15	8.46	N 214.31 W	214.48	272.26	0.03	0.00	-2.55
101	MWD	10337.00	0.50	335.60	94	10330.62	-5.05	9.36	N 214.70 W	214.91	272.50	0.21	-0.21	-1.49
102	MWD	10432.00	0.70	343.50	95	10425.61	-5.97	10.29	N 215.04 W	215.29	272.74	0.23	0.21	8.32
103	MWD	10526.00	0.70	347.50	94	10519.60	-7.08	11.40	N 215.33 W	215.63	273.03	0.05	0.00	4.26
104	MWD	10620.00	0.70	348.60	94	10613.60	-8.20	12.53	N 215.56 W	215.93	273.33	0.01	0.00	1.17
105	MWD	10715.00	0.90	340.90	95	10708.59	-9.46	13.80	N 215.92 W	216.36	273.66	0.24	0.21	-8.11
106	MWD	10810.00	0.70	4.20	95	10803.58	-10.74	15.08	N 216.12 W	216.65	273.99	0.40	-0.21	-354.42
107	MWD	10835.00	0.50	357.20	25	10828.58	-11.01	15.35	N 216.12 W	216.66	274.06	0.85	-0.80	1412.00
108	MWD	10980.00	1.10	17.40	145	10973.56	-12.97	17.31	N 215.73 W	216.43	274.59	0.45	0.41	-234.34
109	MWD	11074.00	1.60	49.10	94	11067.54	-14.72	19.03	N 214.47 W	215.31	275.07	0.94	0.53	33.72
110	MWD	11168.00	1.10	329.20	94	11161.52	-16.36	20.66	N 213.94 W	214.94	275.52	1.89	-0.53	297.98
111	MWD	11261.00	2.60	312.40	93	11254.47	-18.51	22.85	N 215.96 W	217.16	276.04	1.70	1.61	-18.06
112	MWD	11354.00	1.80	264.20	93	11347.40	-19.73	24.12	N 218.97 W	220.29	276.29	2.09	-0.86	-51.83
113	MWD	11448.00	2.10	266.30	94	11441.35	-19.40	23.86	N 222.16 W	223.43	276.13	0.33	0.32	2.23
114	MWD	11541.00	1.40	281.60	93	11534.31	-19.46	23.98	N 224.97 W	226.24	276.09	0.90	-0.75	16.45
115	MWD	11635.00	1.20	351.40	94	11628.29	-20.64	25.19	N 226.24 W	227.64	276.35	1.59	-0.21	74.26
116	MWD	11729.00	0.70	38.00	94	11722.28	-22.07	26.61	N 226.03 W	227.60	276.71	0.94	-0.53	-333.40
117	MWD	11823.00	5.60	139.60	94	11816.13	-19.10	23.57	N 222.71 W	223.95	276.04	6.15	5.21	108.09



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Survey #	Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
								N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
118	MWD	11870.00	13.50	135.00	47	11862.44	-13.57	17.94 N	217.33 W	218.07	274.72	16.87	16.81	-9.79
119	MWD	11917.00	18.70	129.70	47	11907.58	-5.07	9.24 N	207.65 W	207.85	272.55	11.49	11.06	-11.28
120	MWD	11964.00	26.90	141.00	47	11950.89	7.78	3.87 S	195.13 W	195.17	268.86	19.71	17.45	24.04
121	MWD	12010.00	32.40	153.30	46	11990.89	26.67	23.00 S	183.03 W	184.47	262.84	17.78	11.96	26.74
122	MWD	12057.00	40.60	163.80	47	12028.68	52.47	49.00 S	173.07 W	179.88	254.19	21.88	17.45	22.34
123	MWD	12104.00	46.10	168.80	47	12062.85	83.64	80.33 S	165.51 W	183.98	244.11	13.79	11.70	10.64
124	MWD	12151.00	48.20	170.90	47	12094.82	117.42	114.25 S	159.45 W	196.15	234.38	5.54	4.47	4.47
125	MWD	12197.00	49.60	173.30	46	12125.06	151.65	148.58 S	154.69 W	214.49	226.16	4.97	3.04	5.22
126	MWD	12244.00	52.40	176.00	47	12154.64	187.93	184.94 S	151.31 W	238.94	219.29	7.44	5.96	5.74
127	MWD	12291.00	54.90	177.90	47	12182.49	225.68	222.73 S	149.30 W	268.14	213.84	6.24	5.32	4.04
128	MWD	12338.00	55.80	178.10	47	12209.22	264.29	261.37 S	147.95 W	300.34	209.51	1.95	1.91	0.43
129	MWD	12385.00	56.80	180.40	47	12235.30	303.36	300.46 S	147.45 W	334.69	206.14	4.59	2.13	4.89
130	MWD	12432.00	59.10	181.10	47	12260.24	343.20	340.29 S	147.97 W	371.07	203.50	5.05	4.89	1.49
131	MWD	12478.00	60.40	180.70	46	12283.41	382.93	380.02 S	148.59 W	408.04	201.36	2.92	2.83	-0.87
132	MWD	12525.00	62.50	180.50	47	12305.87	424.21	421.31 S	149.03 W	446.89	199.48	4.48	4.47	-0.43
133	MWD	12572.00	65.80	181.10	47	12326.36	466.50	463.59 S	149.62 W	487.14	197.89	7.11	7.02	1.28
134	MWD	12619.00	70.70	179.30	47	12343.77	510.13	507.23 S	149.76 W	528.88	196.45	11.02	10.43	-3.83
135	MWD	12666.00	76.20	177.20	47	12357.16	555.11	552.24 S	148.37 W	571.83	195.04	12.46	11.70	-4.47
136	MWD	12713.00	80.20	176.50	47	12366.77	600.98	598.17 S	145.84 W	615.69	193.70	8.63	8.51	-1.49
137	MWD	12759.00	84.10	177.20	46	12373.05	646.41	643.66 S	143.34 W	659.43	192.55	8.61	8.48	1.52
138	MWD	12787.00	85.00	177.40	28	12375.71	674.22	671.50 S	142.03 W	686.36	191.94	3.29	3.21	0.71
139	MWD	12852.00	89.70	179.10	65	12378.71	739.04	736.38 S	140.05 W	749.58	190.77	7.69	7.23	2.62
140	MWD	12880.00	89.70	179.00	28	12378.86	767.03	764.38 S	139.58 W	777.02	190.35	0.36	0.00	-0.36
141	MWD	12974.00	88.90	180.20	94	12380.01	860.98	858.37 S	138.93 W	869.54	189.19	1.53	-0.85	1.28
142	MWD	13068.00	89.00	182.50	94	12381.73	954.96	952.32 S	141.14 W	962.72	188.43	2.45	0.11	2.45
143	MWD	13162.00	89.60	182.30	94	12382.88	1048.93	1046.23 S	145.08 W	1056.24	187.89	0.67	0.64	-0.21
144	MWD	13256.00	89.60	183.00	94	12383.53	1142.89	1140.12 S	149.42 W	1149.87	187.47	0.74	0.00	0.74
145	MWD	13351.00	89.70	182.80	95	12384.11	1237.85	1235.00 S	154.23 W	1244.59	187.12	0.24	0.11	-0.21
146	MWD	13444.00	89.00	184.20	93	12385.17	1330.76	1327.82 S	159.91 W	1337.41	186.87	1.68	-0.75	1.51
147	MWD	13537.00	87.60	180.90	93	12387.93	1423.68	1420.67 S	164.04 W	1430.11	186.59	3.85	-1.51	-3.55
148	MWD	13631.00	89.60	179.50	94	12390.23	1517.63	1514.63 S	164.37 W	1523.53	186.19	2.60	2.13	-1.49
149	MWD	13724.00	89.20	178.60	93	12391.20	1610.56	1607.62 S	162.83 W	1615.84	185.78	1.06	-0.43	-0.97
150	MWD	13817.00	91.30	177.70	93	12390.79	1703.43	1700.56 S	159.83 W	1708.05	185.37	2.46	2.26	-0.97
151	MWD	13911.00	91.10	178.30	94	12388.82	1797.26	1794.48 S	156.55 W	1801.30	184.99	0.67	-0.21	0.64
152	MWD	14005.00	90.10	178.60	94	12387.84	1891.15	1888.44 S	154.00 W	1894.71	184.66	1.11	-1.06	0.32
153	MWD	14098.00	90.30	179.70	93	12387.52	1984.09	1981.43 S	152.62 W	1987.30	184.40	1.20	0.22	1.18
154	MWD	14191.00	90.60	179.50	93	12386.79	2077.06	2074.42 S	151.98 W	2079.98	184.19	0.39	0.32	-0.22
155	MWD	14285.00	89.40	179.50	94	12386.79	2171.01	2168.42 S	151.16 W	2173.68	183.99	1.28	-1.28	0.00
156	MWD	14377.00	88.50	179.30	92	12388.47	2262.96	2260.40 S	150.19 W	2265.38	183.80	1.00	-0.98	-0.22
157	MWD	14472.00	90.10	179.80	95	12389.63	2357.91	2355.38 S	149.45 W	2360.12	183.63	1.76	1.68	0.53



DRILTECH MWD SURVEY REPORT

Company: EOG Resources, Inc.
Well: Rattlesnake 21 Fed Com #702H
Location: Lea Co., NM.
Rig: H&P 415

Job Number: M-2015-125-EODT-NM
Vertical Section Plane: 181.15
WELL API #: 30-025-42828
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		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
								N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
158	MWD	14565.00	89.60	179.70	93	12389.88	2450.88	2448.38 S	149.04 W	2452.91	183.48	0.55	-0.54	-0.11
159	MWD	14659.00	91.10	180.00	94	12389.30	2544.85	2542.38 S	148.79 W	2546.73	183.35	1.63	1.60	0.32
160	MWD	14752.00	91.00	180.70	93	12387.60	2637.83	2635.36 S	149.36 W	2639.59	183.24	0.76	-0.11	0.75
161	MWD	14846.00	90.60	180.70	94	12386.28	2731.81	2729.34 S	150.51 W	2733.49	183.16	0.43	-0.43	0.00
162	MWD	14939.00	90.40	179.30	93	12385.47	2824.79	2822.34 S	150.51 W	2826.35	183.05	1.52	-0.22	-1.51
163	MWD	15033.00	90.40	179.00	94	12384.82	2918.73	2916.32 S	149.12 W	2920.13	182.93	0.32	0.00	-0.32
164	MWD	15127.00	90.30	179.80	94	12384.24	3012.68	3010.32 S	148.13 W	3013.96	182.82	0.86	-0.11	0.85
165	MWD	15221.00	91.10	180.50	94	12383.09	3106.66	3104.31 S	148.38 W	3107.85	182.74	1.13	0.85	0.74
166	MWD	15314.00	90.80	180.20	93	12381.55	3199.64	3197.29 S	148.95 W	3200.76	182.67	0.46	-0.32	-0.32
167	MWD	15408.00	89.60	180.20	94	12381.22	3293.62	3291.29 S	149.27 W	3294.67	182.60	1.28	-1.28	0.00
168	MWD	15502.00	91.50	180.50	94	12380.32	3387.60	3385.28 S	149.85 W	3388.59	182.53	2.05	2.02	0.32
169	MWD	15596.00	90.60	178.10	94	12378.60	3481.53	3479.25 S	148.70 W	3482.42	182.45	2.73	-0.96	-2.55
170	MWD	15689.00	89.90	179.00	93	12378.19	3574.43	3572.22 S	146.35 W	3575.21	182.35	1.23	-0.75	0.97
171	MWD	15783.00	90.80	179.80	94	12377.62	3668.39	3666.21 S	145.36 W	3669.09	182.27	1.28	0.96	0.85
172	MWD	15876.00	90.60	179.10	93	12376.48	3761.34	3759.20 S	144.47 W	3761.97	182.20	0.78	-0.22	-0.75
173	MWD	15969.00	90.30	180.20	93	12375.75	3854.30	3852.19 S	143.90 W	3854.88	182.14	1.23	-0.32	1.18
174	MWD	16062.00	90.60	181.40	93	12375.02	3947.30	3945.18 S	145.20 W	3947.85	182.11	1.33	0.32	1.29
175	MWD	16155.00	90.80	181.10	93	12373.89	4040.29	4038.15 S	147.23 W	4040.83	182.09	0.39	0.22	-0.32
176	MWD	16250.00	90.60	182.30	95	12372.72	4135.27	4133.10 S	150.05 W	4135.82	182.08	1.28	-0.21	1.26
177	MWD	16343.00	90.40	183.00	93	12371.91	4228.24	4225.99 S	154.35 W	4228.81	182.09	0.78	-0.22	0.75
178	MWD	16437.00	90.40	181.80	94	12371.26	4322.21	4319.91 S	158.28 W	4322.80	182.10	1.28	0.00	-1.28
179	MWD	16530.00	91.70	181.10	93	12369.55	4415.19	4412.86 S	160.64 W	4415.78	182.08	1.59	1.40	-0.75
180	MWD	16623.00	91.80	182.50	93	12366.71	4508.14	4505.77 S	163.55 W	4508.73	182.08	1.51	0.11	1.51
181	MWD	16717.00	90.10	182.50	94	12365.15	4602.10	4599.66 S	167.65 W	4602.72	182.09	1.81	-1.81	0.00
182	MWD	16810.00	89.90	181.60	93	12365.15	4695.09	4692.60 S	170.98 W	4695.71	182.09	0.99	-0.22	-0.97
183	MWD	16904.00	91.10	180.90	94	12364.33	4789.08	4786.57 S	173.03 W	4789.70	182.07	1.48	1.28	-0.74
184	MWD	16997.00	89.70	180.90	93	12363.68	4882.07	4879.56 S	174.49 W	4882.67	182.05	1.51	-1.51	0.00
185	MWD	17092.00	90.60	181.10	95	12363.44	4977.07	4974.54 S	176.15 W	4977.66	182.03	0.97	0.95	0.21
186	MWD	17186.00	88.90	182.10	94	12363.85	5071.06	5068.50 S	178.77 W	5071.65	182.02	2.10	-1.81	1.06
187	MWD	17279.00	90.60	183.00	93	12364.25	5164.03	5161.40 S	182.91 W	5164.64	182.03	2.07	1.83	0.97
188	MWD	17373.00	90.80	181.10	94	12363.10	5258.01	5255.33 S	186.27 W	5258.63	182.03	2.03	0.21	-2.02
189	MWD	17466.00	91.30	179.80	93	12361.40	5350.98	5348.31 S	187.00 W	5351.58	182.00	1.50	0.54	-1.40
190	MWD	17560.00	89.60	179.00	94	12360.66	5444.93	5442.30 S	186.02 W	5445.47	181.96	2.00	-1.81	-0.85
191	MWD	17655.00	91.10	180.50	95	12360.08	5539.90	5537.29 S	185.61 W	5540.40	181.92	2.23	1.58	1.58
192	MWD	17749.00	89.90	179.00	94	12359.26	5633.86	5631.28 S	185.20 W	5634.32	181.88	2.04	-1.28	-1.60
193	MWD	17842.00	89.20	178.10	93	12359.99	5726.76	5724.24 S	182.84 W	5727.16	181.83	1.23	-0.75	-0.97
194	MWD	17936.00	90.30	179.30	94	12360.40	5820.67	5818.22 S	180.71 W	5821.02	181.78	1.73	1.17	1.28
195	MWD	18029.00	90.30	179.80	93	12359.91	5913.63	5911.21 S	179.98 W	5913.95	181.74	0.54	0.00	0.54
196	MWD	18123.00	88.30	179.50	94	12361.06	6007.59	6005.20 S	179.41 W	6007.88	181.71	2.15	-2.13	-0.32
197	MWD	18217.00	90.30	178.80	94	12362.21	6101.52	6099.18 S	178.01 W	6101.77	181.67	2.25	2.13	-0.74

DRILTECH MWD SURVEY REPORT

Company: EOG Resources, Inc.
Well: Rattlesnake 21 Fed Com #702H
Location: Lea Co., NM.
Rig: H&P 415

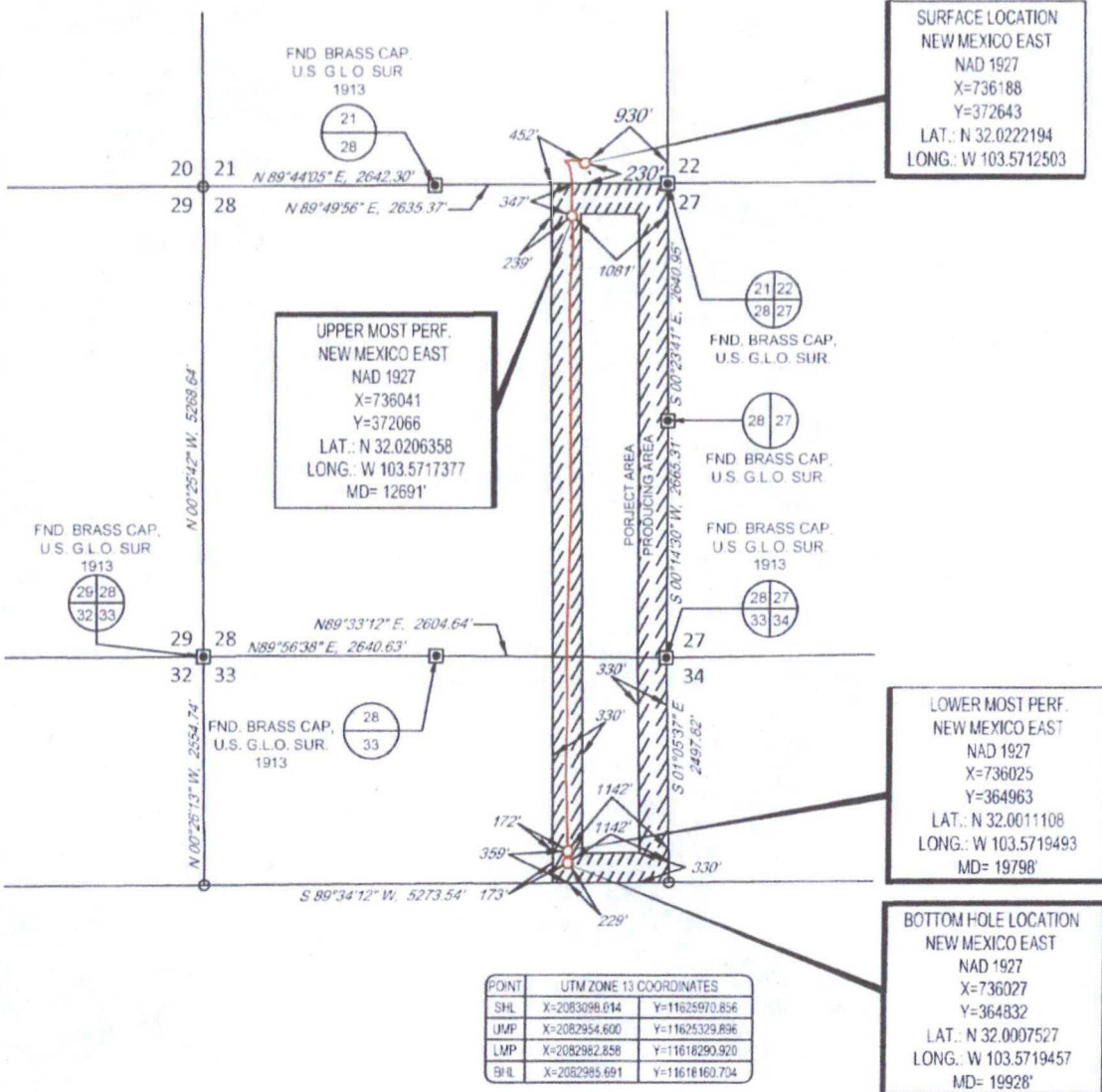
Job Number:	M-2015-125-EODT-NM
Vertical Section Plane:	181.15
WELL API #:	30-025-42828
Tie Into:	Surface

Calculation Method Minimum Curvature

[illegible]

SCALE 1" = 2000'

SECTION 21, TOWNSHIP 26-S, RANGE 33-E, N.M.P.M.
LEA COUNTY, NEW MEXICO



POINT	UTM ZONE 13 COORDINATES
SHL	X=2083098.014 Y=11625970.856
UMP	X=2082954.600 Y=11625329.896
LMP	X=2082982.858 Y=11618290.920
SHL	X=2082985.691 Y=11618160.704

LEASE NAME & WELL NO.: RATTLESNAKE 21 FED COM #702H
 SECTION 21 TWP 26-S RGE 33-E SURVEY N.M.P.M.
 COUNTY LEA STATE NM ELEVATION 3253'
 DESCRIPTION 230' FSL & 930' FEL



TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

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Michael Blake Brown, P.S. No. 18329
 MARCH 25, 2016

eoog resources, Inc.

RATTLESNAKE 12 FED COM #702H AS-COMPLETED DATE: 03/25/2016 FILE: AD_RATTLESNAKE21FEDCOM_702H DRAWN BY: MML SHEET: 1 OF 1	REVISION:		NOTES: 1. ORIGINAL DOCUMENT SIZE: 8.5" X 11" 2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET, NORTH AMERICAN DATUM 1927. 3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY. MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY EOG RESOURCES, INC. ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.