

SEP 26 2016



RECEIVED Minimum Curvature Calculation

Client: EOG Resources
Well: Black Bear 36 State #704H
County, ST: Lea County, NM
Rig: Precision 612
Lat / Long: 32° 5' 36.387 N / -103° 31' 9.265 W
API#: 30-025-43009
RKB / GL: 3350' / 3325'
Vertical Section Angle: 175.47

Job #: PB-161100
M.W.D. Operators: Keith Clark / Josh Posey
Directional Drillers: Cory Baker / Jessie Ramirez
Tool Azimuth to Grid North: 6.50
Geomagnetic Model: HDGM
Single or Multi-well Pad (# /total): 2 of 2
DSI Corrected Runs:

Survey #	Meas. Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N / -S	+E / -W	DLS
Tie In	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gyro	94.90	0.18	104.77	94.90	0.05	-0.04	0.14	0.19
Gyro	188.21	0.40	97.64	188.21	0.17	-0.12	0.61	0.24
Gyro	281.52	0.35	98.36	281.52	0.30	-0.20	1.21	0.05
Gyro	374.83	0.38	96.34	374.82	0.42	-0.28	1.80	0.03
Gyro	468.14	0.41	71.03	468.13	0.40	-0.20	2.43	0.19
Gyro	561.45	0.52	70.38	561.44	0.20	0.05	3.14	0.12
Gyro	654.76	0.58	54.38	654.75	-0.15	0.46	3.92	0.18
Gyro	748.07	0.67	43.89	748.05	-0.76	1.13	4.69	0.16
Gyro	841.38	0.75	52.32	841.35	-1.45	1.90	5.55	0.14
Gyro	934.69	0.87	60.96	934.65	-2.08	2.62	6.65	0.18
Gyro	1028.00	0.89	77.15	1027.95	-2.48	3.12	7.98	0.27
Gyro	1076.00	0.99	89.78	1075.95	-2.50	3.20	8.75	0.48
1	1242.00	1.06	88.41	1241.92	-2.32	3.25	11.72	0.04
2	1428.00	2.20	56.60	1427.84	-3.95	5.27	16.42	0.76
3	1614.00	3.34	46.49	1613.63	-9.08	10.96	23.33	0.66
4	1801.00	4.48	53.43	1800.19	-16.39	19.06	33.15	0.66
5	1987.00	4.04	49.21	1985.67	-24.12	27.67	43.95	0.29
6	2174.00	3.61	49.65	2172.26	-31.46	35.79	53.42	0.23
7	2361.00	5.10	54.22	2358.71	-39.21	44.46	64.65	0.82
8	2546.00	5.01	54.49	2542.99	-47.64	53.96	77.90	0.05
9	2732.00	5.10	55.72	2728.27	-55.92	63.33	91.34	0.08
10	2919.00	5.01	55.81	2914.54	-64.09	72.60	104.96	0.05
11	3104.00	5.10	57.56	3098.82	-71.93	81.55	118.58	0.10
12	3291.00	5.98	64.51	3284.95	-79.31	90.20	134.39	0.59
13	3477.00	5.89	66.35	3469.95	-85.90	98.20	151.88	0.11
14	3665.00	5.45	63.28	3657.03	-92.43	106.09	168.69	0.28
15	3852.00	5.01	66.97	3843.25	-98.38	113.27	184.13	0.30
16	4038.00	5.01	68.55	4028.54	-103.32	119.42	199.17	0.07
17	4225.00	4.04	64.68	4214.96	-108.03	125.22	212.72	0.54
18	4412.00	3.34	64.33	4401.57	-112.33	130.40	223.59	0.37
19	4598.00	3.69	77.16	4587.22	-115.15	134.08	234.31	0.46
20	4785.00	3.87	83.67	4773.82	-116.22	136.11	246.45	0.25
21	4972.00	3.34	70.92	4960.45	-117.79	138.59	257.87	0.51
22	5158.00	2.29	71.63	5146.22	-120.04	141.53	266.51	0.56
23	5345.00	3.78	43.24	5332.96	-125.08	147.20	274.28	1.11
24	5532.00	3.61	41.22	5519.58	-133.33	156.12	282.39	0.11
25	5718.00	3.08	42.97	5705.26	-140.79	164.18	289.65	0.29
26	5905.00	2.99	41.04	5892.00	-147.60	171.53	296.28	0.07
27	6092.00	2.64	42.80	6078.77	-153.93	178.37	302.40	0.19
28	6278.00	2.29	37.61	6264.60	-159.59	184.46	307.58	0.22
29	6464.00	2.46	42.36	6450.44	-165.07	190.35	312.54	0.14
30	6650.00	2.29	41.30	6636.28	-170.39	196.09	317.68	0.09
31	6836.00	2.11	41.74	6822.14	-175.35	201.44	322.42	0.10
32	7023.00	1.76	44.56	7009.03	-179.61	206.05	326.72	0.19
33	7209.00	1.58	51.41	7194.96	-182.91	209.69	330.73	0.14
34	7396.00	1.41	46.49	7381.89	-185.80	212.88	334.41	0.11
35	7582.00	1.06	44.82	7567.85	-188.36	215.68	337.29	0.19
36	7774.00	1.67	81.12	7759.80	-189.73	217.37	341.30	0.54
37	7961.00	1.41	120.23	7946.73	-188.63	216.63	345.98	0.57
38	8147.00	1.41	108.89	8132.68	-186.41	214.74	350.13	0.15
39	8334.00	1.76	175.69	8319.62	-182.63	211.13	352.52	0.95

Survey #	Meas. Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N / -S	+E / -W	DLS
40	8520.00	0.62	278.79	8505.59	-180.00	208.43	351.74	1.07
41	8707.00	0.44	265.60	8692.58	-180.24	208.53	350.02	0.12
42	8894.00	0.53	277.29	8879.57	-180.42	208.59	348.45	0.07
43	9080.00	0.35	265.78	9065.57	-180.60	208.66	347.03	0.11
44	9267.00	0.18	260.59	9252.57	-180.57	208.57	346.17	0.09
45	9453.00	0.26	14.94	9438.57	-180.95	208.93	345.99	0.20
46	9640.00	0.35	333.37	9625.56	-181.88	209.85	345.84	0.12
47	9826.00	0.97	307.35	9811.55	-183.45	211.31	344.34	0.36
48	10013.00	1.32	300.76	9998.51	-185.75	213.37	341.23	0.20
49	10199.00	1.14	328.09	10184.47	-188.63	216.04	338.41	0.33
50	10384.00	1.49	358.15	10369.43	-192.67	220.00	337.36	0.41
51	10572.00	0.79	280.89	10557.40	-195.46	222.69	336.01	0.81
52	10758.00	0.70	260.24	10743.38	-195.70	222.74	333.63	0.15
53	10802.00	0.70	252.95	10787.38	-195.61	222.62	333.11	0.20
54	10986.00	0.88	235.72	10971.36	-194.67	221.49	330.86	0.16
55	11173.00	0.26	232.47	11158.35	-193.72	220.42	329.34	0.33
56	11359.00	1.41	209.18	11344.33	-191.59	218.17	327.89	0.63
57	11547.00	0.70	191.60	11532.29	-188.56	215.02	326.53	0.41
58	11732.00	0.97	44.38	11717.29	-188.51	215.04	327.40	0.87
59	11918.00	0.88	326.07	11903.27	-190.79	217.35	327.70	0.63
60	12073.00	0.62	66.62	12058.26	-192.09	218.67	327.81	0.75
61	12104.00	0.62	57.83	12089.26	-192.23	218.82	328.10	0.31
62	12167.00	1.49	154.33	12152.25	-191.62	218.27	328.75	2.66
63	12197.00	2.20	170.50	12182.23	-190.68	217.35	329.01	2.91
64	12228.00	3.69	184.21	12213.19	-189.10	215.77	329.04	5.28
65	12260.00	6.42	191.16	12245.07	-186.36	212.98	328.62	8.73
66	12290.00	9.15	191.51	12274.79	-182.45	209.00	327.81	9.10
67	12321.00	15.48	187.82	12305.06	-176.04	202.48	326.76	20.57
68	12352.00	25.50	185.80	12334.06	-165.40	191.71	325.52	32.40
69	12383.00	34.56	186.94	12360.87	-150.19	176.31	323.78	29.28
70	12414.00	45.73	186.24	12384.53	-130.61	156.49	321.50	36.06
71	12444.00	56.37	181.40	12403.37	-107.56	133.25	320.02	37.60
72	12475.00	60.67	178.68	12419.56	-81.22	106.82	320.02	15.76
73	12506.00	63.40	178.85	12434.09	-53.88	79.45	320.61	8.82
74	12537.00	64.02	178.85	12447.82	-26.14	51.67	321.17	2.00
75	12568.00	65.86	178.50	12460.95	1.90	23.59	321.82	6.02
76	12599.00	68.06	177.36	12473.08	30.40	-4.91	322.85	7.86
77	12630.00	70.70	176.04	12484.00	59.40	-33.88	324.52	9.40
78	12661.00	73.34	175.16	12493.57	88.88	-63.27	326.79	8.93
79	12692.00	75.27	174.90	12501.96	118.73	-93.00	329.37	6.28
80	12723.00	76.59	175.16	12509.49	148.79	-122.96	331.98	4.34
81	12754.00	78.79	175.95	12516.10	179.08	-153.15	334.32	7.52
82	12785.00	79.58	176.57	12521.92	209.53	-183.54	336.31	3.22
83	12816.00	79.93	177.18	12527.43	240.02	-214.00	337.97	2.24
84	12847.00	81.87	177.10	12532.33	270.62	-244.57	339.50	6.26
85	12878.00	84.42	177.18	12536.03	301.38	-275.31	341.04	8.23
86	12940.00	88.64	178.68	12539.79	363.19	-337.14	343.27	7.22
87	13034.00	85.21	178.24	12544.83	456.92	-430.95	345.79	3.68
88	13128.00	84.94	178.24	12552.90	550.46	-524.56	348.67	0.29
89	13220.00	89.69	178.50	12557.21	642.21	-616.40	351.28	5.17
90	13313.00	90.31	179.73	12557.21	735.02	-709.38	352.72	1.48
91	13405.00	87.32	176.48	12559.11	826.88	-801.29	355.76	4.80
92	13498.00	86.79	174.81	12563.89	919.76	-893.90	362.81	1.88
93	13592.00	89.78	176.13	12566.70	1013.70	-987.55	370.23	3.48
94	13685.00	90.92	177.45	12566.13	1106.67	-1080.40	375.43	1.88
95	13778.00	88.37	179.47	12566.71	1199.53	-1173.35	377.93	3.50
96	13871.00	92.77	183.07	12565.78	1292.01	-1266.28	375.87	6.11
97	13964.00	87.85	180.52	12565.28	1384.41	-1359.20	372.96	5.96
98	14058.00	87.58	180.00	12569.03	1478.01	-1453.12	372.54	0.62
99	14151.00	90.31	180.52	12570.74	1570.66	-1546.10	372.11	2.99
100	14244.00	89.96	179.64	12570.52	1663.36	-1639.10	371.98	1.02
101	14338.00	88.37	179.38	12571.89	1757.11	-1733.08	372.79	1.71
102	14432.00	89.16	180.96	12573.92	1850.77	-1827.05	372.51	1.88
103	14525.00	90.84	181.49	12573.92	1943.29	-1920.03	370.52	1.89
104	14619.00	89.52	182.11	12573.62	2036.72	-2013.98	367.57	1.55

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105	14712.00	86.70	179.91	12576.69	2129.22	-2106.90	365.93	3.84
107	14806.00	88.64	183.34	12580.51	2222.58	-2200.76	363.26	4.19
108	14898.00	89.69	185.62	12581.85	2313.43	-2292.47	356.08	2.73
109	14992.00	91.71	186.59	12580.71	2405.80	-2385.92	346.08	2.38
110	15085.00	92.42	185.88	12577.35	2497.10	-2478.31	335.99	1.08
111	15178.00	86.35	181.84	12578.35	2589.04	-2571.03	329.73	7.84
112	15271.00	91.80	182.46	12579.85	2681.36	-2663.92	326.24	5.90
113	15365.00	90.31	179.38	12578.12	2774.91	-2757.88	324.74	3.64
114	15459.00	89.52	178.41	12578.26	2868.74	-2851.86	326.55	1.33
115	15551.00	89.25	177.71	12579.25	2960.64	-2943.80	329.66	0.82
116	15645.00	88.46	177.18	12581.13	3054.56	-3037.68	333.85	1.01
117	15739.00	88.20	176.92	12583.87	3148.49	-3131.52	338.69	0.39
118	15832.00	90.40	178.41	12585.00	3241.40	-3224.43	342.48	2.86
119	15925.00	89.96	178.33	12584.71	3334.28	-3317.39	345.12	0.48
120	16018.00	89.78	179.29	12584.92	3427.12	-3410.37	347.05	1.05
121	16112.00	85.47	178.24	12588.82	3520.86	-3504.24	349.07	4.72
122	16205.00	87.76	178.41	12594.31	3613.58	-3597.03	351.79	2.47
123	16298.00	89.16	178.24	12596.81	3706.43	-3689.96	354.51	1.52
124	16391.00	88.90	179.03	12598.38	3799.27	-3782.92	356.72	0.89
125	16483.00	90.66	181.05	12598.73	3890.97	-3874.91	356.66	2.91
126	16577.00	89.78	182.81	12598.37	3984.37	-3968.85	353.49	2.09
127	16669.00	88.72	182.81	12599.58	4075.61	-4060.73	348.98	1.15
128	16763.00	87.85	181.67	12602.39	4168.91	-4154.61	345.31	1.53
129	16856.00	90.04	180.96	12604.10	4261.40	-4247.57	343.17	2.48
130	16949.00	88.72	178.41	12605.11	4354.13	-4340.55	343.69	3.09
131	17041.00	92.07	181.23	12604.48	4445.85	-4432.52	343.98	4.76
132	17134.00	90.13	180.52	12602.69	4538.41	-4525.49	342.56	2.22
133	17227.00	89.60	178.85	12602.91	4631.15	-4618.49	343.07	1.88
134	17320.00	89.87	177.10	12603.34	4724.06	-4711.42	346.35	1.90
135	17371.00	89.96	175.60	12603.41	4775.05	-4762.32	349.60	2.95
PTBTD	17424.00	89.96	175.60	12603.45	4828.05	-4815.16	353.67	0.00