



HOBBS OCD

JUL 30 2015

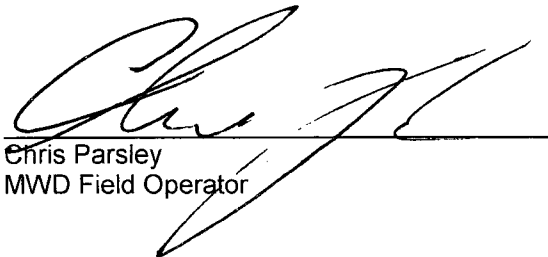
RECEIVED

30-025-42386

MWD Survey Certification

State of New Mexico
County of Lea

I, Chris Parsley, certify that; I am employed by MWD Services, LLC; that I did on the day(s) of 2/17/15 through 3/2/15 conduct or supervise the taking of MWD survey(s) from a depth of 162 feet to a depth of 16,059 feet; that the data is true, correct, complete and within the limitations of the tool set forth by MWD Services, LLC; that I am authorized and qualified to make this report; that this report was conducted at the request of EOG Resources, Inc., for the Frazier 34 State Com #501H Well, API # 30-025-42386 and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by MWD Services, LLC.


Chris Parsley
MWD Field Operator

AUG 03 2015



MWD SURVEY REPORT

MWD Services, LLC

Survey End Date :	March 02, 2015	Target +N / -S =	5300.0'
Job Number :	15028	Target +E / -W =	424.0'
Operator :	EOG Resources, Inc.	Target TVD =	11165.0'
Lease / Well :	Frazier 34 State Com #501H	Magnetic Declination +E / -W =	7.21°
API Number :	30-025-42386	Grid Convergence +E / -W =	0.42°
Location :	Lea County, New Mexico	Total Correction +E / -W =	6.79°
Field / Formation :	Bone Spring	North Reference =	Grid
Contractor / Rig :	Helmerich & Payne Int. Drilling Company Rig 328	Magnetic Reference Model =	WMM2015
Directional Company :	EOG Resources, Inc.	Declination Date =	2/13/15
MWD Field Rep. :	Chris Parsley, Chris Adams	RKB Height =	24.00'
Tie In Survey Reference :	Surface, Assume Vertical	Ground Level Elevation =	3505'
Calculation Method :	Minimum Curvature	Vertical Section Azimuth =	4.57°

Comments :

SURVEY #0 = TIE IN SURVEY

SURVEY #129 = STRAIGHT LINE PROJECTED SURVEY TO BIT DEPTH

Srv. No.	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (deg/100')
							+N / -S (ft)	+E / -W (ft)	Distance (ft)	Azimuth (deg)	
0	0.00'	0.00°	0.00°	0'	0.00'		0.00'	0.00'	0.00'	0.00°	
1	162.00'	0.90°	128.50°	162'	161.99'	-0.71'	-0.79'	1.00'	1.27'	128.50°	0.56°
2	342.00'	1.10°	123.60°	180'	341.97'	-2.34'	-2.63'	3.54'	4.41'	126.58°	0.12°
3	495.00'	0.80°	104.60°	153'	494.95'	-3.24'	-3.71'	5.80'	6.88'	122.62°	0.28°
4	676.00'	1.90°	69.60°	181'	675.89'	-2.19'	-2.98'	9.83'	10.28'	106.87°	0.73°
5	858.00'	3.20°	72.10°	182'	857.71'	1.03'	-0.37'	17.50'	17.50'	91.21°	0.72°
6	1039.00'	2.20°	89.90°	181'	1038.51'	3.24'	1.19'	25.78'	25.80'	87.36°	0.71°
7	1199.00'	4.10°	94.20°	160'	1198.26'	3.53'	0.78'	34.55'	34.56'	88.71°	1.20°
8	1324.00'	4.60°	97.10°	125'	1322.90'	3.33'	-0.17'	43.98'	43.98'	90.22°	0.44°
9	1514.00'	3.40°	89.60°	190'	1512.44'	3.49'	-1.07'	57.18'	57.19'	91.08°	0.69°
10	1703.00'	3.20°	91.30°	189'	1701.12'	4.27'	-1.15'	68.06'	68.07'	90.97°	0.12°
11	1893.00'	2.80°	83.10°	190'	1890.86'	5.50'	-0.72'	77.97'	77.97'	90.53°	0.31°
12	2082.00'	2.50°	76.10°	189'	2079.66'	7.72'	0.83'	86.55'	86.55'	89.45°	0.23°
13	2272.00'	2.10°	65.80°	190'	2269.51'	10.71'	3.25'	93.75'	93.80'	88.01°	0.30°
14	2462.00'	3.00°	96.90°	190'	2459.33'	12.18'	4.08'	101.86'	101.94'	87.71°	0.85°
15	2651.00'	3.20°	99.90°	189'	2648.05'	11.49'	2.58'	111.97'	112.00'	88.68°	0.14°
16	2841.00'	2.90°	92.60°	190'	2837.78'	11.16'	1.45'	121.99'	122.00'	89.32°	0.26°
17	3031.00'	2.60°	88.50°	190'	3027.56'	11.79'	1.34'	131.10'	131.11'	89.41°	0.19°
18	3220.00'	2.50°	79.60°	189'	3216.38'	13.30'	2.20'	139.44'	139.46'	89.10°	0.22°
19	3410.00'	3.40°	91.30°	190'	3406.12'	14.70'	2.82'	149.15'	149.18'	88.92°	0.57°
20	3599.00'	3.40°	89.30°	189'	3594.79'	15.53'	2.76'	160.36'	160.38'	89.01°	0.06°
21	3789.00'	2.80°	82.90°	190'	3784.51'	16.99'	3.40'	170.60'	170.63'	88.86°	0.36°
22	3978.00'	2.20°	79.20°	189'	3973.33'	18.88'	4.65'	178.74'	178.80'	88.51°	0.33°
23	4168.00'	1.90°	74.80°	190'	4163.21'	20.91'	6.16'	185.36'	185.46'	88.10°	0.18°
24	4357.00'	2.00°	78.20°	189'	4352.10'	22.90'	7.66'	191.61'	191.77'	87.71°	0.08°
25	4547.00'	2.90°	90.60°	190'	4541.93'	24.17'	8.29'	199.67'	199.84'	87.62°	0.55°
26	4736.00'	3.10°	96.00°	189'	4730.67'	24.37'	7.70'	209.53'	209.67'	87.89°	0.18°

Srv.	Survey Depth	Inclination	Azimuth	Course Length	True Vertical	Vertical Section	Coordinates		Closure		Dogleg Severity
							+N / -S	+E / -W	Distance	Azimuth	
27	4926.00'	3.70°	109.20°	190'	4920.34'	22.70'	5.15'	220.43'	220.49'	88.66°	0.52°
28	5073.00'	3.10°	103.30°	147'	5067.08'	20.90'	2.68'	228.78'	228.79'	89.33°	0.47°
29	5207.00'	2.60°	99.70°	134'	5200.91'	20.07'	1.33'	235.30'	235.30'	89.68°	0.40°
30	5397.00'	3.50°	93.30°	190'	5390.64'	19.82'	0.27'	245.34'	245.34'	89.94°	0.51°
31	5586.00'	5.20°	89.60°	189'	5579.09'	20.69'	0.00'	259.66'	259.66'	90.00°	0.91°
32	5776.00'	5.00°	89.00°	190'	5768.34'	22.24'	0.20'	276.55'	276.55'	89.96°	0.11°
33	5966.00'	5.10°	87.60°	190'	5957.60'	24.06'	0.70'	293.27'	293.27'	89.86°	0.08°
34	6155.00'	5.10°	89.30°	189'	6145.85'	25.86'	1.15'	310.06'	310.06'	89.79°	0.08°
35	6345.00'	4.90°	87.30°	190'	6335.13'	27.66'	1.64'	326.61'	326.61'	89.71°	0.14°
36	6534.00'	4.80°	90.60°	189'	6523.45'	29.23'	1.94'	342.58'	342.58'	89.68°	0.16°
37	6724.00'	4.80°	93.40°	190'	6712.79'	29.94'	1.38'	358.46'	358.47'	89.78°	0.12°
38	6914.00'	4.80°	95.00°	190'	6902.12'	30.04'	0.22'	374.32'	374.32'	89.97°	0.07°
39	7103.00'	4.70°	90.90°	189'	7090.47'	30.48'	-0.59'	389.94'	389.94'	90.09°	0.19°
40	7293.00'	3.80°	83.50°	190'	7279.95'	32.19'	0.00'	403.98'	403.98'	90.00°	0.55°
41	7482.00'	1.00°	78.30°	189'	7468.76'	33.85'	1.04'	411.82'	411.82'	89.86°	1.48°
42	7672.00'	0.90°	71.30°	190'	7658.74'	34.91'	1.86'	414.85'	414.86'	89.74°	0.08°
43	7861.00'	0.50°	128.30°	189'	7847.73'	35.03'	1.82'	416.91'	416.91'	89.75°	0.40°
44	8051.00'	0.90°	142.80°	190'	8037.71'	33.46'	0.12'	418.46'	418.46'	89.98°	0.23°
45	8241.00'	0.60°	136.20°	190'	8227.69'	31.69'	-1.79'	420.05'	420.05'	90.24°	0.16°
46	8430.00'	0.70°	101.70°	189'	8416.68'	30.89'	-2.74'	421.86'	421.87'	90.37°	0.21°
47	8620.00'	0.60°	321.50°	190'	8606.68'	31.47'	-2.19'	422.38'	422.39'	90.30°	0.64°
48	8809.00'	0.20°	85.80°	189'	8795.67'	32.24'	-1.39'	422.09'	422.10'	90.19°	0.39°
49	8998.00'	0.40°	224.90°	189'	8984.67'	31.79'	-1.84'	421.96'	421.96'	90.25°	0.30°
50	9181.00'	0.10°	247.40°	183'	9167.67'	31.23'	-2.35'	421.36'	421.37'	90.32°	0.17°
51	9377.00'	0.70°	203.80°	196'	9363.67'	30.02'	-3.51'	420.72'	420.73'	90.48°	0.32°
52	9566.00'	2.60°	227.70°	189'	9552.58'	25.80'	-7.45'	417.08'	417.15'	91.02°	1.05°
53	9756.00'	1.90°	236.10°	190'	9742.43'	20.70'	-12.11'	411.28'	411.46'	91.69°	0.41°
54	9945.00'	2.00°	228.70°	189'	9931.32'	16.38'	-16.04'	406.20'	406.52'	92.26°	0.14°
55	10135.00'	1.70°	198.40°	190'	10121.23'	11.26'	-20.90'	402.82'	403.36'	92.97°	0.53°
56	10324.00'	1.70°	219.00°	189'	10310.15'	6.23'	-25.74'	400.17'	401.00'	93.68°	0.32°
57	10483.00'	2.00°	212.00°	159'	10469.07'	1.82'	-29.92'	397.22'	398.34'	94.31°	0.24°
58	10526.00'	2.10°	214.90°	43'	10512.04'	0.48'	-31.21'	396.37'	397.60'	94.50°	0.34°
59	10573.00'	3.40°	352.90°	47'	10559.01'	1.10'	-30.53'	395.70'	396.88'	94.41°	10.97°
60	10621.00'	10.50°	0.40°	48'	10606.63'	6.86'	-24.73'	395.56'	396.33'	93.58°	14.88°
61	10668.00'	18.50°	2.00°	47'	10652.10'	18.60'	-12.98'	395.85'	396.06'	91.88°	17.04°
62	10716.00'	25.50°	1.30°	48'	10696.57'	36.55'	4.98'	396.35'	396.38'	89.28°	14.59°
63	10763.00'	29.50°	359.10°	47'	10738.26'	58.18'	26.68'	396.40'	397.29'	86.15°	8.78°
64	10810.00'	33.60°	359.10°	47'	10778.30'	82.65'	51.26'	396.01'	399.31'	82.62°	8.72°
65	10857.00'	37.20°	2.30°	47'	10816.61'	109.80'	78.47'	396.38'	404.07'	78.80°	8.61°
66	10905.00'	40.40°	1.10°	48'	10854.01'	139.84'	108.53'	397.26'	411.82'	74.72°	6.85°
67	10952.00'	45.50°	0.60°	47'	10888.40'	171.78'	140.54'	397.73'	421.83'	70.54°	10.88°
68	11000.00'	49.70°	359.70°	48'	10920.76'	207.11'	175.98'	397.81'	435.00'	66.14°	8.86°
69	11047.00'	50.90°	359.80°	47'	10950.78'	243.15'	212.14'	397.65'	450.70'	61.92°	2.56°
70	11095.00'	53.20°	359.30°	48'	10980.30'	280.85'	249.98'	397.35'	469.45'	57.82°	4.86°
71	11142.00'	57.50°	359.00°	47'	11007.02'	319.33'	288.64'	396.78'	490.65'	53.97°	9.16°
72	11189.00'	61.70°	0.40°	47'	11030.80'	359.71'	329.16'	396.57'	515.38'	50.31°	9.30°
73	11236.00'	65.80°	1.30°	47'	11051.58'	401.77'	371.30'	397.21'	543.72'	46.93°	8.89°
74	11284.00'	67.20°	0.90°	48'	11070.72'	445.71'	415.31'	398.05'	575.26'	43.78°	3.02°
75	11331.00'	69.10°	0.40°	47'	11088.21'	489.22'	458.93'	398.54'	607.83'	40.97°	4.16°
76	11379.00'	71.70°	0.60°	48'	11104.31'	534.33'	504.14'	398.94'	642.89'	38.36°	5.43°
77	11426.00'	73.10°	0.60°	47'	11118.52'	579.02'	548.94'	399.41'	678.87'	36.04°	2.98°

Srv.	Survey	Inclination	Azimuth	Course Length	True Vertical	Vertical Section	Coordinates		Closure		Dogleg Severity
	Depth						+N / -S	+E / -W	Distance	Azimuth	
78	11474.00'	74.80°	0.90°	48'	11131.79'	625.04'	595.06'	400.01'	717.01'	33.91°	3.59°
79	11521.00'	77.20°	1.90°	47'	11143.16'	670.57'	640.65'	401.13'	755.87'	32.05°	5.51°
80	11536.00'	79.70°	2.00°	15'	11146.16'	685.25'	655.33'	401.63'	768.62'	31.50°	16.68°
81	11602.00'	87.10°	3.30°	66'	11153.75'	750.73'	720.78'	404.66'	826.61'	29.31°	11.38°
82	11697.00'	90.20°	3.20°	95'	11155.98'	845.67'	815.59'	410.05'	912.87'	26.69°	3.26°
83	11792.00'	88.40°	3.00°	95'	11157.14'	940.63'	910.44'	415.18'	1000.64'	24.51°	1.91°
84	11887.00'	89.10°	3.10°	95'	11159.22'	1035.57'	1005.28'	420.24'	1089.58'	22.69°	0.74°
85	11981.00'	90.90°	2.80°	94'	11159.22'	1129.53'	1099.15'	425.07'	1178.48'	21.14°	1.94°
86	12076.00'	91.40°	1.60°	95'	11157.31'	1224.42'	1194.06'	428.72'	1268.69'	19.75°	1.37°
87	12171.00'	91.00°	1.40°	95'	11155.32'	1319.27'	1289.01'	431.21'	1359.22'	18.50°	0.47°
88	12266.00'	89.20°	0.90°	95'	11155.15'	1414.09'	1383.98'	433.11'	1450.17'	17.38°	1.97°
89	12361.00'	88.80°	359.90°	95'	11156.81'	1508.83'	1478.97'	433.78'	1541.27'	16.35°	1.13°
90	12456.00'	89.40°	359.90°	95'	11158.30'	1603.50'	1573.95'	433.61'	1632.59'	15.40°	0.63°
91	12551.00'	89.80°	359.80°	95'	11158.97'	1698.17'	1668.95'	433.36'	1724.30'	14.56°	0.43°
92	12646.00'	90.50°	0.10°	95'	11158.72'	1792.86'	1763.95'	433.28'	1816.38'	13.80°	0.80°
93	12741.00'	89.60°	0.20°	95'	11158.64'	1887.58'	1858.95'	433.53'	1908.83'	13.13°	0.95°
94	12835.00'	90.50°	0.00°	94'	11158.55'	1981.29'	1952.95'	433.69'	2000.52'	12.52°	0.98°
95	12930.00'	89.60°	359.90°	95'	11158.47'	2075.98'	2047.95'	433.61'	2093.35'	11.95°	0.95°
96	13025.00'	89.80°	359.90°	95'	11158.97'	2170.67'	2142.95'	433.44'	2186.34'	11.43°	0.21°
97	13120.00'	90.30°	0.20°	95'	11158.89'	2265.37'	2237.94'	433.53'	2279.55'	10.96°	0.61°
98	13214.00'	90.20°	0.00°	94'	11158.48'	2359.08'	2331.94'	433.69'	2371.93'	10.54°	0.24°
99	13309.00'	90.20°	0.10°	95'	11158.14'	2453.79'	2426.94'	433.77'	2465.40'	10.13°	0.11°
100	13404.00'	90.80°	0.00°	95'	11157.31'	2548.49'	2521.94'	433.86'	2558.99'	9.76°	0.64°
101	13499.00'	89.20°	359.90°	95'	11157.31'	2643.18'	2616.94'	433.77'	2652.64'	9.41°	1.69°
102	13593.00'	89.10°	359.80°	94'	11158.71'	2736.85'	2710.92'	433.53'	2745.37'	9.09°	0.15°
103	13688.00'	89.50°	359.40°	95'	11159.87'	2831.48'	2805.92'	432.86'	2839.11'	8.77°	0.60°
104	13783.00'	90.50°	359.20°	95'	11159.87'	2926.08'	2900.91'	431.70'	2932.85'	8.46°	1.07°
105	13878.00'	89.20°	359.30°	95'	11160.12'	3020.67'	2995.90'	430.46'	3026.66'	8.18°	1.37°
106	13973.00'	89.40°	359.50°	95'	11161.28'	3115.28'	3090.88'	429.47'	3120.58'	7.91°	0.30°
107	14068.00'	90.20°	359.40°	95'	11161.61'	3209.90'	3185.88'	428.55'	3214.57'	7.66°	0.85°
108	14162.00'	90.20°	359.40°	94'	11161.28'	3303.51'	3279.87'	427.57'	3307.62'	7.43°	0.00°
109	14257.00'	90.10°	359.20°	95'	11161.03'	3398.11'	3374.86'	426.41'	3401.70'	7.20°	0.24°
110	14352.00'	90.00°	359.30°	95'	11160.95'	3492.70'	3469.86'	425.16'	3495.81'	6.99°	0.15°
111	14447.00'	90.20°	358.70°	95'	11160.79'	3587.25'	3564.84'	423.51'	3589.91'	6.78°	0.67°
112	14541.00'	89.90°	358.50°	94'	11160.70'	3680.74'	3658.81'	421.21'	3682.98'	6.57°	0.38°
113	14636.00'	89.70°	358.50°	95'	11161.03'	3775.21'	3753.78'	418.72'	3777.06'	6.36°	0.21°
114	14731.00'	88.80°	358.60°	95'	11162.28'	3869.68'	3848.74'	416.32'	3871.19'	6.17°	0.95°
115	14826.00'	88.40°	359.50°	95'	11164.60'	3964.21'	3943.70'	414.75'	3965.45'	6.00°	1.04°
116	14921.00'	88.70°	359.90°	95'	11167.00'	4058.83'	4038.67'	414.25'	4059.86'	5.86°	0.53°
117	15015.00'	90.20°	0.40°	94'	11167.91'	4152.55'	4132.66'	414.49'	4153.39'	5.73°	1.68°
118	15110.00'	90.90°	0.60°	95'	11166.99'	4247.30'	4227.65'	415.32'	4248.00'	5.61°	0.77°
119	15205.00'	91.60°	0.60°	95'	11164.92'	4342.05'	4322.62'	416.32'	4342.62'	5.50°	0.74°
120	15300.00'	93.30°	359.90°	95'	11160.86'	4436.69'	4417.53'	416.73'	4437.14'	5.39°	1.93°
121	15394.00'	92.30°	359.10°	94'	11156.27'	4530.21'	4511.41'	415.91'	4530.54'	5.27°	1.36°
122	15489.00'	90.20°	359.00°	95'	11154.20'	4624.74'	4606.37'	414.34'	4624.97'	5.14°	2.21°
123	15584.00'	88.30°	358.80°	95'	11155.44'	4719.26'	4701.34'	412.51'	4719.40'	5.01°	2.01°
124	15679.00'	88.80°	358.70°	95'	11157.84'	4813.74'	4796.29'	410.44'	4813.82'	4.89°	0.54°
125	15774.00'	89.60°	358.90°	95'	11159.17'	4908.25'	4891.26'	408.45'	4908.28'	4.77°	0.87°
126	15869.00'	89.40°	359.00°	95'	11160.00'	5002.79'	4986.24'	406.71'	5002.80'	4.66°	0.24°
127	15964.00'	88.80°	359.20°	95'	11161.49'	5097.35'	5081.21'	405.22'	5097.35'	4.56°	0.67°
128	16059.00'	88.90°	359.20°	95'	11163.40'	5191.91'	5176.18'	403.89'	5191.92'	4.46°	0.11°

Srv.	Survey	Inclination	Azimuth	Course Length	True Vertical	Vertical Section	Coordinates		Closure		Dogleg Severity
	Depth						+N / -S	+E / -W	Distance	Azimuth	
129	16122.00'	88.90°	359.20°	63'	11164.61'	5254.62'	5239.17'	403.01'	5254.64'	4.40°	0.00°