



HOBBS OCD

JUL 30 2015

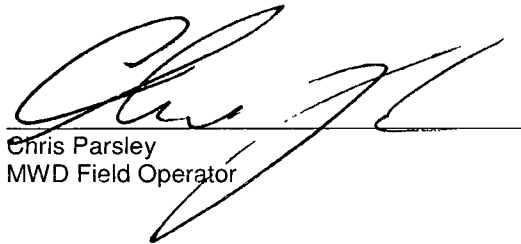
RECEIVED

30-025-42387

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 2/16/15 through 3/18/15 conduct or supervise the taking of MWD survey(s) from a depth of 162 feet to a depth of 15,873 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 #502H Well, API # 30-025-42387 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 18, 2015	Target +N / -S = 5327.0'
Job Number : 15030	Target +E / -W = 14.0'
Operator : EOG Resources, Inc.	Target TVD = 10890.0'
Lease / Well : Frazier 34 State Com #502H	Magnetic Declination +E / -W = 7.21°
API Number : 30-025-42387	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 = 2/15/15
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 = 0.15°

Comments :

SURVEY #0 = TIE IN SURVEY
 SURVEY #125 = 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'	0.50°	82.70°	162'	162.00'	0.09'	0.09'	0.70'	0.71'	82.70°	0.31°
2	342.00'	0.80°	52.00°	180'	341.99'	0.97'	0.96'	2.47'	2.65'	68.70°	0.25°
3	586.00'	0.70°	271.30°	244'	585.98'	2.05'	2.05'	2.32'	3.10'	48.62°	0.58°
4	767.00'	0.80°	252.60°	181'	766.96'	1.69'	1.69'	0.01'	1.69'	0.39°	0.15°
5	948.00'	0.40°	244.50°	181'	947.95'	1.04'	1.04'	-1.76'	2.05'	300.59°	0.23°
6	1129.00'	0.90°	232.50°	181'	1128.94'	-0.10'	-0.09'	-3.46'	3.46'	268.44°	0.28°
7	1195.00'	1.20°	229.80°	66'	1194.93'	-0.87'	-0.86'	-4.40'	4.48'	259.00°	0.46°
8	1331.00'	1.40°	227.30°	136'	1330.89'	-2.92'	-2.90'	-6.71'	7.31'	246.62°	0.15°
9	1520.00'	1.20°	43.30°	189'	1519.88'	-3.05'	-3.03'	-7.05'	7.67'	246.76°	1.37°
10	1710.00'	1.00°	30.30°	190'	1709.84'	-0.16'	-0.15'	-4.85'	4.85'	268.25°	0.17°
11	1900.00'	0.90°	21.60°	190'	1899.82'	2.66'	2.67'	-3.46'	4.37'	307.64°	0.09°
12	2090.00'	1.00°	27.30°	190'	2089.79'	5.53'	5.53'	-2.15'	5.94'	338.73°	0.07°
13	2279.00'	1.00°	10.40°	189'	2278.76'	8.62'	8.62'	-1.10'	8.69'	352.73°	0.16°
14	2469.00'	1.10°	359.10°	190'	2468.73'	12.07'	12.07'	-0.83'	12.10'	356.07°	0.12°
15	2658.00'	1.20°	351.10°	189'	2657.69'	15.84'	15.84'	-1.16'	15.89'	355.80°	0.10°
16	2848.00'	0.70°	29.10°	190'	2847.67'	18.82'	18.82'	-0.91'	18.84'	357.24°	0.41°
17	3037.00'	0.70°	59.70°	189'	3036.65'	20.42'	20.41'	0.65'	20.42'	1.83°	0.20°
18	3227.00'	0.80°	55.20°	190'	3226.64'	21.76'	21.76'	2.74'	21.93'	7.19°	0.06°
19	3416.00'	1.20°	52.10°	189'	3415.61'	23.74'	23.73'	5.39'	24.33'	12.79°	0.21°
20	3606.00'	0.90°	62.50°	190'	3605.58'	25.66'	25.64'	8.28'	26.94'	17.90°	0.19°
21	3796.00'	0.60°	72.60°	190'	3795.56'	26.65'	26.62'	10.55'	28.64'	21.63°	0.17°
22	3985.00'	0.80°	88.10°	189'	3984.55'	27.00'	26.96'	12.82'	29.85'	25.43°	0.14°
23	4175.00'	0.60°	78.80°	190'	4174.53'	27.24'	27.20'	15.12'	31.12'	29.07°	0.12°
24	4364.00'	0.40°	92.40°	189'	4363.52'	27.41'	27.36'	16.75'	32.08'	31.47°	0.12°
25	4554.00'	0.90°	113.10°	190'	4553.51'	26.80'	26.75'	18.78'	32.69'	35.08°	0.29°
26	4743.00'	1.40°	113.60°	189'	4742.47'	25.30'	25.24'	22.27'	33.66'	41.41°	0.26°

Srv.	Survey Depth	Inclination	Azimuth	Course Length	True Vertical	Vertical Section	Coordinates		Closure		Dogleg Severity
							+N / -S	+E / -W	Distance	Azimuth	
27	4933.00'	0.70°	160.40°	190'	4932.44'	23.29'	23.22'	24.78'	33.96'	46.86°	0.55°
28	4993.00'	0.60°	156.90°	60'	4992.44'	22.65'	22.59'	25.03'	33.71'	47.93°	0.18°
29	5119.00'	0.50°	184.40°	126'	5118.43'	21.50'	21.43'	25.24'	33.12'	49.67°	0.22°
30	5309.00'	0.50°	191.80°	190'	5308.43'	19.86'	19.79'	25.01'	31.90'	51.64°	0.03°
31	5499.00'	0.40°	177.70°	190'	5498.42'	18.39'	18.32'	24.87'	30.89'	53.62°	0.08°
32	5688.00'	0.40°	177.80°	189'	5687.42'	17.07'	17.00'	24.92'	30.17'	55.70°	0.00°
33	5878.00'	0.30°	151.40°	190'	5877.41'	15.97'	15.90'	25.18'	29.78'	57.73°	0.10°
34	6067.00'	0.30°	171.20°	189'	6066.41'	15.05'	14.98'	25.50'	29.57'	59.57°	0.05°
35	6257.00'	0.30°	164.70°	190'	6256.41'	14.08'	14.01'	25.70'	29.27'	61.41°	0.02°
36	6446.00'	0.30°	168.60°	189'	6445.41'	13.11'	13.05'	25.93'	29.03'	63.29°	0.01°
37	6636.00'	0.40°	174.80°	190'	6635.40'	11.97'	11.90'	26.09'	28.67'	65.49°	0.06°
38	6826.00'	1.40°	129.80°	190'	6825.38'	9.82'	9.75'	27.93'	29.59'	70.76°	0.61°
39	7015.00'	1.00°	66.30°	189'	7014.34'	9.02'	8.94'	31.22'	32.47'	74.03°	0.69°
40	7205.00'	1.30°	67.80°	190'	7204.30'	10.51'	10.42'	34.73'	36.26'	73.30°	0.16°
41	7394.00'	1.30°	40.60°	189'	7393.26'	12.95'	12.85'	38.11'	40.22'	71.36°	0.32°
42	7584.00'	0.80°	350.30°	190'	7583.23'	15.90'	15.80'	39.29'	42.35'	68.10°	0.53°
43	7773.00'	0.60°	311.20°	189'	7772.22'	17.85'	17.75'	38.32'	42.24'	65.15°	0.27°
44	7963.00'	0.80°	292.10°	190'	7962.20'	19.00'	18.91'	36.35'	40.97'	62.52°	0.16°
45	8153.00'	0.30°	225.60°	190'	8152.19'	19.15'	19.06'	34.76'	39.64'	61.27°	0.39°
46	8342.00'	0.40°	196.20°	189'	8341.19'	18.17'	18.08'	34.22'	38.71'	62.16°	0.11°
47	8532.00'	0.50°	184.90°	190'	8531.18'	16.70'	16.61'	33.97'	37.81'	63.94°	0.07°
48	8721.00'	0.80°	170.20°	189'	8720.17'	14.58'	14.49'	34.12'	37.07'	66.99°	0.18°
49	8910.00'	1.00°	164.80°	189'	8909.15'	11.69'	11.60'	34.78'	36.66'	71.55°	0.11°
50	9100.00'	1.10°	155.30°	190'	9099.12'	8.44'	8.34'	35.98'	36.93'	76.94°	0.11°
51	9289.00'	0.40°	119.20°	189'	9288.10'	6.47'	6.37'	37.31'	37.85'	80.31°	0.43°
52	9479.00'	0.60°	68.80°	190'	9478.09'	6.51'	6.41'	38.82'	39.34'	80.62°	0.24°
53	9668.00'	0.40°	96.00°	189'	9667.09'	6.80'	6.70'	40.40'	40.95'	80.58°	0.16°
54	9857.00'	0.50°	103.00°	189'	9856.08'	6.55'	6.44'	41.86'	42.35'	81.25°	0.06°
55	10047.00'	2.50°	158.50°	190'	10046.01'	2.52'	2.40'	44.18'	44.25'	86.89°	1.19°
56	10236.00'	2.40°	173.00°	189'	10234.84'	-5.24'	-5.36'	46.18'	46.49'	96.62°	0.33°
57	10341.00'	5.10°	17.00°	105'	10339.73'	-2.95'	-3.08'	47.81'	47.91'	93.68°	7.01°
58	10388.00'	12.10°	12.90°	47'	10386.17'	3.86'	3.73'	49.52'	49.66'	85.69°	14.94°
59	10436.00'	17.60°	15.60°	48'	10432.55'	15.77'	15.63'	52.60'	54.87'	73.45°	11.55°
60	10483.00'	22.40°	6.20°	47'	10476.72'	31.54'	31.39'	55.48'	63.75'	60.50°	12.26°
61	10531.00'	27.00°	0.30°	48'	10520.32'	51.54'	51.39'	56.53'	76.40'	47.72°	10.86°
62	10578.00'	33.30°	356.30°	47'	10560.95'	75.11'	74.96'	55.75'	93.42'	36.64°	14.06°
63	10626.00'	38.10°	356.20°	48'	10599.91'	103.05'	102.91'	53.92'	116.17'	27.65°	10.00°
64	10673.00'	40.10°	355.10°	47'	10636.39'	132.59'	132.46'	51.66'	142.18'	21.31°	4.50°
65	10720.00'	42.50°	355.30°	47'	10671.69'	163.50'	163.37'	49.07'	170.58'	16.72°	5.11°
66	10767.00'	46.50°	354.90°	47'	10705.21'	196.30'	196.18'	46.25'	201.56'	13.27°	8.53°
67	10815.00'	48.50°	354.80°	48'	10737.64'	231.54'	231.43'	43.07'	235.40'	10.54°	4.17°
68	10910.00'	56.50°	358.30°	95'	10795.43'	306.69'	306.59'	38.67'	309.02'	7.19°	8.91°
69	10957.00'	62.30°	359.10°	47'	10819.35'	347.11'	347.01'	37.76'	349.06'	6.21°	12.43°
70	11005.00'	63.60°	358.90°	48'	10841.18'	389.85'	389.76'	37.01'	391.51'	5.42°	2.73°
71	11052.00'	66.90°	358.40°	47'	10860.85'	432.51'	432.42'	36.00'	433.92'	4.76°	7.09°
72	11099.00'	72.60°	358.90°	47'	10877.11'	476.57'	476.48'	34.97'	477.77'	4.20°	12.17°
73	11146.00'	76.60°	358.90°	47'	10889.59'	521.87'	521.78'	34.10'	522.89'	3.74°	8.51°
74	11194.00'	80.80°	359.40°	48'	10898.99'	568.92'	568.83'	33.40'	569.81'	3.36°	8.81°
75	11241.00'	83.70°	359.60°	47'	10905.33'	615.48'	615.40'	32.99'	616.28'	3.07°	6.18°
76	11292.00'	88.10°	358.40°	51'	10908.98'	666.33'	666.25'	32.11'	667.02'	2.76°	8.94°
77	11418.00'	90.50°	358.90°	126'	10910.52'	792.26'	792.19'	29.14'	792.73'	2.11°	1.95°

Srv.	Survey		Azimuth	Course Length	True Vertical	Vertical Section	Coordinates		Closure		Dogleg Severity
	Depth	Inclination					+N / -S	+E / -W	Distance	Azimuth	
78	11513.00'	89.90°	358.90°	95'	10910.18'	887.24'	887.17'	27.31'	887.59'	1.76°	0.63°
79	11608.00'	89.70°	359.60°	95'	10910.52'	982.23'	982.16'	26.07'	982.51'	1.52°	0.77°
80	11703.00'	90.50°	0.50°	95'	10910.35'	1077.23'	1077.16'	26.15'	1077.48'	1.39°	1.27°
81	11797.00'	90.10°	0.10°	94'	10909.86'	1171.22'	1171.16'	26.65'	1171.46'	1.30°	0.60°
82	11892.00'	90.90°	0.20°	95'	10909.03'	1266.22'	1266.15'	26.89'	1266.44'	1.22°	0.85°
83	11987.00'	90.90°	359.80°	95'	10907.54'	1361.21'	1361.14'	26.89'	1361.41'	1.13°	0.42°
84	12082.00'	90.60°	359.70°	95'	10906.29'	1456.20'	1456.13'	26.48'	1456.37'	1.04°	0.33°
85	12176.00'	90.10°	359.40°	94'	10905.72'	1550.19'	1550.13'	25.74'	1550.34'	0.95°	0.62°
86	12271.00'	89.60°	358.90°	95'	10905.97'	1645.17'	1645.12'	24.33'	1645.30'	0.85°	0.74°
87	12366.00'	90.30°	359.20°	95'	10906.05'	1740.16'	1740.10'	22.76'	1740.25'	0.75°	0.80°
88	12461.00'	91.90°	358.60°	95'	10904.23'	1835.11'	1835.06'	20.93'	1835.18'	0.65°	1.80°
89	12556.00'	90.90°	358.40°	95'	10901.91'	1930.04'	1930.00'	18.45'	1930.09'	0.55°	1.07°
90	12651.00'	89.60°	358.10°	95'	10901.49'	2024.99'	2024.95'	15.55'	2025.01'	0.44°	1.40°
91	12745.00'	89.50°	359.20°	94'	10902.23'	2118.95'	2118.92'	13.33'	2118.97'	0.36°	1.18°
92	12840.00'	90.20°	359.10°	95'	10902.48'	2213.94'	2213.91'	11.92'	2213.94'	0.31°	0.74°
93	12935.00'	88.80°	359.80°	95'	10903.31'	2308.92'	2308.90'	11.01'	2308.93'	0.27°	1.65°
94	13030.00'	89.10°	359.70°	95'	10905.05'	2403.90'	2403.88'	10.60'	2403.91'	0.25°	0.33°
95	13125.00'	89.00°	0.60°	95'	10906.62'	2498.89'	2498.87'	10.84'	2498.89'	0.25°	0.95°
96	13219.00'	89.40°	0.30°	94'	10907.94'	2592.88'	2592.86'	11.58'	2592.88'	0.26°	0.53°
97	13314.00'	90.20°	0.10°	95'	10908.27'	2687.88'	2687.86'	11.91'	2687.88'	0.25°	0.87°
98	13409.00'	90.60°	359.80°	95'	10907.60'	2782.87'	2782.85'	11.83'	2782.88'	0.24°	0.53°
99	13503.00'	90.50°	359.60°	94'	10906.70'	2876.87'	2876.85'	11.34'	2876.87'	0.23°	0.24°
100	13598.00'	90.70°	359.40°	95'	10905.71'	2971.86'	2971.84'	10.51'	2971.86'	0.20°	0.30°
101	13693.00'	90.70°	359.10°	95'	10904.55'	3066.84'	3066.82'	9.27'	3066.84'	0.17°	0.32°
102	13788.00'	90.90°	358.90°	95'	10903.22'	3161.81'	3161.80'	7.61'	3161.81'	0.14°	0.30°
103	13883.00'	90.60°	359.20°	95'	10901.98'	3256.78'	3256.78'	6.03'	3256.78'	0.11°	0.45°
104	13978.00'	89.90°	359.80°	95'	10901.56'	3351.77'	3351.77'	5.21'	3351.78'	0.09°	0.97°
105	14072.00'	89.90°	359.30°	94'	10901.73'	3445.77'	3445.77'	4.47'	3445.77'	0.07°	0.53°
106	14167.00'	89.90°	359.40°	95'	10901.89'	3540.76'	3540.76'	3.39'	3540.76'	0.05°	0.11°
107	14262.00'	90.30°	0.50°	95'	10901.73'	3635.76'	3635.76'	3.31'	3635.76'	0.05°	1.23°
108	14356.00'	90.60°	0.40°	94'	10900.99'	3729.75'	3729.76'	4.04'	3729.76'	0.06°	0.34°
109	14451.00'	90.70°	0.00°	95'	10899.91'	3824.75'	3824.75'	4.38'	3824.75'	0.07°	0.43°
110	14546.00'	90.80°	359.80°	95'	10898.67'	3919.74'	3919.74'	4.21'	3919.74'	0.06°	0.24°
111	14641.00'	90.90°	359.50°	95'	10897.26'	4014.72'	4014.73'	3.63'	4014.73'	0.05°	0.33°
112	14735.00'	90.40°	0.20°	94'	10896.19'	4108.72'	4108.72'	3.38'	4108.72'	0.05°	0.92°
113	14830.00'	90.30°	0.00°	95'	10895.61'	4203.71'	4203.72'	3.55'	4203.72'	0.05°	0.24°
114	14925.00'	90.40°	359.90°	95'	10895.03'	4298.71'	4298.72'	3.47'	4298.72'	0.05°	0.15°
115	15020.00'	90.60°	359.90°	95'	10894.20'	4393.71'	4393.71'	3.30'	4393.71'	0.04°	0.21°
116	15114.00'	89.80°	0.10°	94'	10893.87'	4487.70'	4487.71'	3.30'	4487.71'	0.04°	0.88°
117	15209.00'	89.70°	0.00°	95'	10894.29'	4582.70'	4582.71'	3.38'	4582.71'	0.04°	0.15°
118	15304.00'	89.90°	359.80°	95'	10894.62'	4677.70'	4677.71'	3.22'	4677.71'	0.04°	0.30°
119	15399.00'	90.00°	359.70°	95'	10894.70'	4772.70'	4772.71'	2.80'	4772.71'	0.03°	0.15°
120	15494.00'	90.10°	359.40°	95'	10894.62'	4867.69'	4867.71'	2.06'	4867.71'	0.02°	0.33°
121	15589.00'	90.10°	359.00°	95'	10894.45'	4962.68'	4962.70'	0.73'	4962.70'	0.01°	0.42°
122	15684.00'	90.00°	359.00°	95'	10894.37'	5057.66'	5057.68'	-0.93'	5057.68'	359.99°	0.11°
123	15779.00'	90.00°	358.70°	95'	10894.37'	5152.64'	5152.66'	-2.83'	5152.66'	359.97°	0.32°
124	15873.00'	90.30°	358.10°	94'	10894.12'	5246.59'	5246.62'	-5.46'	5246.63'	359.94°	0.71°
125	15963.00'	90.30°	358.10°	90'	10893.65'	5336.53'	5336.57'	-8.44'	5336.58'	359.91°	0.00°