

30.015.39340



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Artesia, NM 88211-1370
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December 29, 2011

COG, LLC
Fasken Center, Tower II
550 West Texas Ave, Suite 1300
Midland, TX 79701

RE: Foster Eddy #34
2046' FNL & 315' FEL
Sec. 17, T17S, R31E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Eddie C. LaRue".

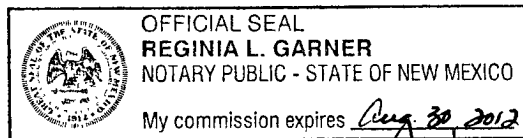
Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 29th day of December, 2011.

A handwritten signature in cursive script, appearing to read "Regina L. Garner".

Notary Public



Foster Eddy #34

Date	Depth	Dev/Inc	Dir/AZ	TVD
12/17/2011	134	0.80		
12/17/2011	228	2.00		268
12/17/2011	287	2.20		327
12/17/2011	327	2.80		
12/19/2011	433	2.20		
12/19/2011	521	1.70		
12/19/2011	610	1.50		
12/20/2011	700	1.10		755
12/20/2011	824	0.90		879
12/20/2011	980	0.80		1035
12/20/2011	1182	17.00		1222
12/20/2011	1432	0.80		1472
12/20/2011	1667	0.60		
12/21/2011	1853	0.80		1886
12/22/2011	1902	0.50	316.50	1901
12/22/2011	1933	0.60	346.50	1932
12/22/2011	2026	1.90	313.20	2025
12/22/2011	2120	3.00	322.20	2159
12/22/2011	2213	4.30	339.00	2253
12/22/2011	2306	4.30	345.70	
12/23/2011	2398	4.40	346.80	2396
12/23/2011	2493	4.00	343.70	2491
12/23/2011	2587	4.60	344.10	2585
12/23/2011	2680	1.40	343.80	2677
12/23/2011	2773	4.30	345.20	2770
12/23/2011	2867	4.70	346.50	2864
12/23/2011	2960	41.90	346.90	2956
12/23/2011	3054	4.80	344.10	3051
12/23/2011	3147	5.10	348.90	3138
12/23/2011	3240	5.30	348.00	3236
12/23/2011	3333	5.20	348.80	3328
12/23/2011	3426	5.10	348.30	3421
12/24/2011	3520	5.20	350.20	3515
12/24/2011	3613	5.30	350.20	3608
12/24/2011	3706	5.40	350.50	3701
12/24/2011	3800	4.70	349.50	3795
12/24/2011	3893	4.70	355.50	3888
12/24/2011	3986	4.50	354.50	3980
12/26/2011	4080	4.50	347.70	4076
12/26/2011	4174	4.50	348.00	4170
12/26/2011	4266	4.60	348.90	4262
12/26/2011	4360	4.70	349.00	4356
12/26/2011	4453	4.70	348.50	4449
12/26/2011	4546	4.70	3501.00	4542
12/26/2011	4640	4.80	348.80	4636
12/27/2011	4733	4.90	351.60	4728
12/27/2011	4828	4.60	347.40	4822
12/27/2011	4920	4.70	352.70	4913
12/27/2011	5013	4.80	351.40	5007
12/27/2011	5107	4.30	348.00	5101

Foster Eddy #34

Date	Depth	Dev/Inc	Dir/AZ	TVD
12/27/2011	5201	4.50	347.30	5190
12/27/2011	5294	4.60	347.00	5283
12/27/2011	5388	4.40	349.50	5376
12/27/2011	5574	4.30	350.20	5562
12/27/2011	5668	5.10	342.60	5656
12/27/2011	5761	5.60	341.90	5748
12/28/2011	5855	5.80	342.80	5835
12/28/2011	5948	6.00	343.50	5928
12/28/2011	6041	5.70	343.50	6020
12/28/2011	6134	5.80	344.00	6113
12/28/2011	6228	5.50	342.90	6215
12/28/2011	6314	5.20	343.00	6301

COG Operating, LLC

Eddy County, NM

Foster Eddy #34

Foster Eddy #34

Wellbore #1

Survey: MWD Survey #1

Standard Survey Report

28 December, 2011

SHL: 2046' FNL & 315' FEL ☐

Top of Paddock : 1783.50' FNL & 350.35' FEL @ 4900' TVD ☐

BHL: 1659.99' FNL & 381.63' FEL

Survey Report

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Site Foster Eddy #34
Project:	Eddy County, NM	TVD Reference:	KB @ 3751 00ft (Silver Oak #6)
Site:	Foster Eddy #34	MD Reference:	KB @ 3751 00ft (Silver Oak #6)
Well:	Foster Eddy #34	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000 1 Black Viper

Project:	Eddy County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site: Foster Eddy #34, Sec.17, T-17-S, R-31-E					
Site Position:		Northing:	668,164 70 ft	Latitude:	32° 50' 9.815 N
From:	Map	Easting:	638,074.00 ft	Longitude:	103° 53' 1.698 W
Position Uncertainty:	0 00 ft	Slot Radius:	13 200 in	Grid Convergence:	0 24 °

Well:	Foster Eddy #34					
Well Position	+N/-S	0 00 ft	Northing:	668,164 70 ft	Latitude:	32° 50' 9.815 N
	+E/-W	0 00 ft	Easting:	638,074 00 ft	Longitude:	103° 53' 1.698 W
Position Uncertainty		0 00 ft	Wellhead Elevation:	3,751 00 ft	Ground Level:	3,734 00 ft

Wellbore						Wellbore #1					
Magnetics		Model Name		Sample Date		Declination		Dip Angle		Field Strength	
						(°)		(°)		(nT)	
		IGRF2010		11/22/2011		7 72		60 69		48,904	

Design:	Wellbore #1				
Audit Notes:					
Version:	1 0	Phase:	ACTUAL	Tie On Depth:	1,870 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0 00	0 00	0 00	0 26	

Survey Program		Date 12/28/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100 00	1,870 00	Gyro Survey #1 (OH)	Gyro	
1,870 00	6,360 00	MWD Survey #1 (Wellbore #1)	MWD	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,870.00	0 94	319 14	1,869 32	35 14	16 76	35 21	0 00	0 00	0 00
LL[FE#34] - HL[FE#34]									
1,902.00	0 50	316 50	1,901 31	35 44	16 49	35 51	1 38	-1 38	-8 25
First MWD Survey									
1,933 00	0.60	346 50	1,932 31	35 69	16 36	35 77	0 97	0 32	96 77
2,026 00	1 90	313.20	2,025 29	37 22	15 12	37 29	1 54	1 40	-35 81
2,057 00	2 10	315 70	2,056 27	37 98	14 35	38 05	0 70	0 65	8 06
2,119 00	3 00	322 20	2,118 21	40 08	12 56	40 13	1 52	1 45	10 48
2,213 00	4 30	339 00	2,212 02	45 31	9 79	45 35	1 78	1 38	17 87

Survey Report

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Site Foster Eddy #34
Project:	Eddy County, NM	TVD Reference:	KB @ 3751.00ft (Silver Oak #6)
Site:	Foster Eddy #34	MD Reference:	KB @ 3751 00ft (Silver Oak #6)
Well:	Foster Eddy #34	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000 1 Black Viper

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,307.00	4.30	345.70	2,305.75	52.02	7.66	52.05	0.53	0.00	7.13
2,400.00	4.40	346.80	2,398.49	58.87	5.98	58.89	0.14	0.11	1.18
2,493.00	4.00	343.70	2,491.24	65.45	4.26	65.47	0.49	-0.43	-3.33
2,587.00	4.60	344.10	2,584.97	72.23	2.30	72.24	0.64	0.64	0.43
2,680.00	4.10	343.80	2,677.70	79.01	0.35	79.01	0.54	-0.54	-0.32
2,773.00	4.30	345.20	2,770.45	85.57	-1.46	85.56	0.24	0.22	1.51
2,867.00	4.70	346.50	2,864.16	92.72	-3.26	92.70	0.44	0.43	1.38
2,960.00	4.90	346.90	2,956.84	100.29	-5.05	100.27	0.22	0.22	0.43
3,054.00	4.80	344.10	3,050.50	107.99	-7.04	107.95	0.27	-0.11	-2.98
3,147.00	5.10	348.90	3,143.15	115.78	-8.90	115.74	0.55	0.32	5.16
3,240.00	5.20	348.00	3,235.78	123.96	-10.57	123.91	0.14	0.11	-0.97
3,333.00	5.20	348.80	3,328.40	132.22	-12.27	132.16	0.08	0.00	0.86
3,426.00	5.10	348.30	3,421.02	140.40	-13.93	140.34	0.12	-0.11	-0.54
3,520.00	5.20	350.20	3,514.64	148.69	-15.50	148.62	0.21	0.11	2.02
3,613.00	5.30	350.20	3,607.25	157.08	-16.95	157.00	0.11	0.11	0.00
3,707.00	5.40	350.50	3,700.84	165.72	-18.41	165.63	0.11	0.11	0.32
3,800.00	4.70	349.50	3,793.48	173.78	-19.83	173.69	0.76	-0.75	-1.08
3,893.00	4.70	355.50	3,886.17	181.32	-20.82	181.23	0.53	0.00	6.45
3,986.00	4.50	354.50	3,978.87	188.75	-21.47	188.66	0.23	-0.22	-1.08
4,080.00	4.50	347.70	4,072.58	196.03	-22.61	195.92	0.57	0.00	-7.23
4,174.00	4.50	348.00	4,166.29	203.24	-24.16	203.13	0.03	0.00	0.32
4,267.00	4.60	348.90	4,259.00	210.47	-25.64	210.35	0.13	0.11	0.97
4,359.00	4.70	349.00	4,350.69	217.79	-27.07	217.66	0.11	0.11	0.11
4,453.00	4.70	348.50	4,444.38	225.34	-28.57	225.21	0.04	0.00	-0.53
4,546.00	4.70	350.10	4,537.06	232.83	-29.99	232.69	0.14	0.00	1.72
4,640.00	4.80	348.80	4,630.74	240.48	-31.41	240.33	0.16	0.11	-1.38
4,733.00	4.90	351.60	4,723.41	248.22	-32.75	248.07	0.28	0.11	3.01
4,827.00	4.60	347.40	4,817.09	255.87	-34.16	255.72	0.49	-0.32	-4.47
4,909.68	4.69	352.07	4,899.50	262.46	-35.35	262.29	0.47	0.10	5.65
Top of Paddock [FE#34]									
4,910.19	4.69	352.10	4,900.00	262.50	-35.35	262.33	0.47	0.12	5.54
Top of Paddock [FE#34] Actual									
4,921.00	4.70	352.70	4,910.78	263.37	-35.47	263.21	0.47	0.12	5.53
5,014.00	4.80	351.40	5,003.46	271.00	-36.54	270.83	0.16	0.11	-1.40
5,107.00	4.30	348.00	5,096.16	278.26	-37.84	278.08	0.61	-0.54	-3.66
5,201.00	4.50	347.30	5,189.89	285.30	-39.39	285.12	0.22	0.21	-0.74
5,294.00	4.60	347.00	5,282.59	292.49	-41.03	292.31	0.11	0.11	-0.32
5,388.00	4.40	349.50	5,376.30	299.71	-42.53	299.52	0.30	-0.21	2.66
5,481.00	4.40	349.90	5,469.03	306.73	-43.81	306.53	0.03	0.00	0.43
5,574.00	4.30	350.20	5,561.76	313.68	-45.03	313.47	0.11	-0.11	0.32
5,668.00	5.10	342.60	5,655.45	321.14	-46.88	320.93	1.08	0.85	-8.09
5,761.00	5.60	341.90	5,748.04	329.40	-49.52	329.17	0.54	0.54	-0.75
5,855.00	5.80	342.80	5,841.58	338.29	-52.35	338.06	0.23	0.21	0.96
5,948.00	6.00	343.50	5,934.08	347.44	-55.12	347.19	0.23	0.22	0.75

Survey Report

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Site Foster Eddy #34
Project:	Eddy County, NM	TVD Reference:	KB @ 3751 00ft (Silver Oak #6)
Site:	Foster Eddy #34	MD Reference:	KB @ 3751 00ft (Silver Oak #6)
Well:	Foster Eddy #34	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Black Viper

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,041 00	5 70	343 50	6,026 60	356 53	-57 81	356 27	0 32	-0 32	0 00
6,134 00	5 80	344 00	6,119 13	365 48	-60 42	365 20	0 12	0 11	0 54
6,228 00	5 50	342 90	6,212 67	374 35	-63 05	374 06	0 34	-0 32	-1 17
6,316 07	5 21	343 00	6,300 36	382 21	-65 46	381 91	0 33	-0 33	0 11
PBHL#3[FE#34]									
6,319 00	5 20	343 00	6,303 28	382 46	-65 54	382 16	0 33	-0 33	0 12
Last MWD Survey									
6,360 00	5 20	343 00	6,344 11	386 01	-66 63	385 71	0 00	0 00	0 00
Proj. To Bit - PBHL#1[FE#34]									

Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Top of Paddock [FE#34]	- survey hits target center	0 00	0 00	4,900 00	262 50	-35 35	668,427 20	638,038 65	32° 50' 12 414 N	103° 53' 2 100 W
	- Point									

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		
		+N/-S (ft)	+E/-W (ft)	Comment
1,902 00	1,901 31	35 44	16 49	First MWD Survey
6,319 00	6,303 28	382 46	-65 54	Last MWD Survey
6,360 00	6,344 11	386 01	-66 63	Proj To Bit

Checked By: _____ Approved By: _____ Date: _____