



PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

30-015-43004

March 27, 2016

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 10 2016

RECEIVED

RE: Bradley 8 Fee 5H
150' FSL & 1157' FWL
Sec. 8, T19S, R26E
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 "Chris Graham".

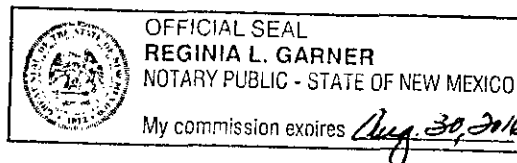
Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 27th day of March, 2016.

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

Notary Public



Bradley 8 Fee 5H

Date	Depth	Deviation	Direction
3/17/2016	224	1.10	222.00
3/17/2016	334	1.20	237.60
3/17/2016	426	1.80	199.50
3/17/2016	514	3.00	196.30
3/17/2016	604	3.80	186.30
3/17/2016	692	4.20	183.90
3/17/2016	813	4.60	184.40
3/17/2016	904	4.90	184.60
3/17/2016	1000	4.30	167.50
3/17/2016	1094	4.50	160.20
3/19/2016	1214	4.90	160.50
3/19/2016	1307	3.60	166.10
3/19/2016	1400	3.60	164.30
3/20/2016	1494	3.30	167.40
3/20/2016	1587	4.00	185.00
3/20/2016	1681	4.20	184.40
3/20/2016	1775	4.30	186.30
3/20/2016	1869	4.00	187.10
3/20/2016	1962	4.00	187.10
3/20/2016	2056	3.80	186.40
3/20/2016	2149	4.00	187.00
3/20/2016	2243	3.90	189.00
3/20/2016	2336	2.40	169.40
3/21/2016	2430	0.50	194.50
3/21/2016	2534	1.10	6.80
3/21/2016	2617	8.70	2.10
3/21/2016	2710	18.60	0.70
3/21/2016	2741	22.50	0.30
3/21/2016	2772	26.20	360.00
3/21/2016	2803	29.80	359.60
3/21/2016	2835	33.60	359.80
3/21/2016	2865	37.40	359.10
3/21/2016	2896	40.90	358.10
3/21/2016	2927	44.10	3359.80
3/21/2016	2959	46.50	1.10
3/21/2016	2990	49.10	1.30
3/21/2016	3020	52.20	0.70
3/21/2016	3176	68.20	0.90
3/21/2016	3288	73.90	0.90
3/21/2016	3270	76.70	359.30
3/21/2016	3301	80.00	358.10
3/21/2016	3394	87.60	357.00

Date	Depth	Deviation	Direction
3/21/2016	3456	88.80	357.50
3/21/2016	3549	90.80	359.10
3/22/2016	3642	92.10	359.80
3/22/2016	3736	90.70	359.40
3/22/2016	3829	89.60	358.80
3/22/2016	3923	90.50	358.30
3/22/2016	4017	91.80	357.80
3/22/2016	4111	89.90	0.20
3/22/2016	4204	90.20	0.20
3/22/2016	4297	90.10	358.90
3/22/2016	4390	91.50	358.40
3/22/2016	4576	89.50	0.10
3/22/2016	4670	88.40	359.20
3/22/2016	4762	90.00	359.70
3/23/2016	4857	89.80	358.60
3/23/2016	4950	91.20	358.30
3/23/2016	5043	89.00	358.60
3/23/2016	5136	90.50	358.90
3/23/2016	5230	89.50	358.50
3/23/2016	5324	90.60	359.20
3/23/2016	5417	89.50	359.50
3/23/2016	5510	90.80	359.60
3/23/2016	5603	90.40	359.10
3/23/2016	5697	89.50	359.00
3/23/2016	5790	90.80	358.70
3/23/2016	5883	90.00	358.80
3/23/2016	6070	90.00	359.40
3/23/2016	6163	91.10	359.00
3/24/2016	6349	91.10	259.60
3/24/2016	6442	90.00	359.40
3/24/2016	6536	91.30	359.50
3/24/2016	6628	90.00	359.20
3/24/2016	6717	91.30	359.30
3/24/2016	6904	91.80	360.00
3/24/2016	6997	91.20	0.30
3/24/2016	7090	90.20	359.20
3/24/2016	7277	90.80	358.20
3/24/2016	7370	89.70	357.30
3/25/2016	7558	88.90	358.40
3/25/2016	7652	90.20	358.50
3/25/2016	7734	91.20	358.10



COG Operating LLC

Eddy County, NM (NAD-27 2015)

Bradley 8 Fee #5H

SHL: 150' FSL, 1157' FWL, Sec 8, T19S, R26E, Unit M

PP: 150' FSL, 1157' FWL, Sec 8, T19S, R26E, Unit M

30-015-43004

BHL: 351' FNL, 1151' FWL, Sec 8, T19S, R26E, Unit D

Design: BHL: 330' FNL, 1157' FWL, Sec 8, T19S, R26E, Unit D

Standard Survey Report

25 March, 2016





TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 150' FSL, 1157' FWL, Sec 8, T19S, R26E, Unit M
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3390.00usft (Silver Oak 3)
Site:	Bradley 8 Fee #5H	MD Reference:	KB @ 3390.00usft (Silver Oak 3)
Well:	SHL: 150' FSL, 1157' FWL, Sec 8, T19S, R26E, Unit M	North Reference:	Grid
Wellbore:	BHL: 330' FNL, 1157' FWL, Sec 8, T19S, R26E, Unit D	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 330' FNL, 1157' FWL, Sec 8, T19S, R26E, Unit D	Database:	EDM 5000.1 Single User Db

Project	Eddy County, NM (NAD-27 2015)		
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	Bradley 8 Fee #5H		
Site Position:		Northing:	606,808.70 usft
From:	Map	Easting:	476,975.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	32° 40' 5.503 N
		Longitude:	104° 24' 29.357 W
		Grid Convergence:	-0.04 °

Well	SHL: 150' FSL, 1157' FWL, Sec 8, T19S, R26E, Unit M		
Well Position	+N/-S	0.00 usft	Northing: 606,808.70 usft
	+E/-W	0.00 usft	Easting: 476,975.50 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 40' 5.503 N
		Longitude:	104° 24' 29.357 W
		Ground Level:	3,372.00 usft

Wellbore	BHL: 330' FNL, 1157' FWL, Sec 8, T19S, R26E, Unit D		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	3/4/2016	7.51
			Dip Angle (°)
			60.35
			Field Strength (nT)
			48,243

Design	BHL: 330' FNL, 1157' FWL, Sec 8, T19S, R26E, Unit D		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			359.12

Survey Program	Date 3/25/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
120.00	7,786.00	TDS MWD #1 (BHL: 330' FNL, 1157' FWL)	MWD
			Description
			MWD - Standard

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
120.00	0.40	57.90	120.00	0.22	0.35	0.22	0.33	0.33	0.00	
154.00	0.60	112.10	154.00	0.22	0.62	0.21	1.44	0.59	159.41	
244.00	1.10	222.00	243.99	-0.60	0.48	-0.61	1.58	0.56	122.11	
334.00	1.20	237.60	333.97	-1.75	-0.89	-1.73	0.36	0.11	17.33	
426.00	1.80	199.50	425.94	-3.63	-2.19	-3.59	1.23	0.65	-41.41	
514.00	3.00	196.30	513.87	-7.14	-3.30	-7.09	1.37	1.36	-3.64	
604.00	3.80	186.30	603.71	-12.36	-4.29	-12.30	1.10	0.89	-11.11	

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Wellbore:	BHL: 330' FNL, 1157' FWL, Sec 8, T19S, R26E, Unit D	Survey Calculation Method:	Minimum Curvature
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Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
692.00	4.20	183.90	691.49	-18.48	-4.83	-18.40	0.49	0.45	-2.73
751.00	4.40	183.20	750.33	-22.89	-5.10	-22.81	0.35	0.34	-1.19
813.00	4.60	184.40	812.14	-27.75	-5.42	-27.66	0.36	0.32	1.94
907.00	4.90	184.60	905.81	-35.51	-6.03	-35.41	0.32	0.32	0.21
1,000.00	4.30	167.50	998.52	-42.87	-5.60	-42.78	1.60	-0.65	-18.39
1,094.00	4.50	160.20	1,092.24	-49.78	-3.59	-49.72	0.63	0.21	-7.77
1,146.00	4.70	160.40	1,144.07	-53.71	-2.18	-53.67	0.39	0.38	0.38
1,214.00	4.90	160.50	1,211.83	-59.07	-0.28	-59.06	0.29	0.29	0.15
1,307.00	3.60	166.10	1,304.58	-65.65	1.75	-65.67	1.47	-1.40	6.02
1,400.00	3.60	164.30	1,397.39	-71.29	3.24	-71.33	0.12	0.00	-1.94
1,494.00	3.30	167.40	1,491.22	-76.77	4.63	-76.84	0.38	-0.32	3.30
1,587.00	4.00	185.00	1,584.04	-82.62	4.93	-82.68	1.41	0.75	18.92
1,681.00	4.20	184.40	1,677.80	-89.31	4.38	-89.37	0.22	0.21	-0.64
1,775.00	4.30	186.30	1,771.54	-96.25	3.73	-96.30	0.18	0.11	2.02
1,869.00	4.00	187.10	1,865.29	-103.01	2.94	-103.04	0.33	-0.32	0.85
1,962.00	4.00	187.10	1,958.06	-109.44	2.14	-109.46	0.00	0.00	0.00
2,056.00	3.80	186.40	2,051.85	-115.79	1.39	-115.80	0.22	-0.21	-0.74
2,149.00	4.00	187.00	2,144.63	-122.07	0.65	-122.07	0.22	0.22	0.65
2,243.00	3.90	189.00	2,238.41	-128.49	-0.25	-128.47	0.18	-0.11	2.13
2,336.00	2.40	169.40	2,331.27	-133.52	-0.39	-133.50	1.96	-1.61	-21.08
2,430.00	0.50	174.50	2,425.23	-135.87	0.01	-135.85	2.02	-2.02	5.43
2,492.00	0.40	157.00	2,487.23	-136.34	0.12	-136.32	0.27	-0.16	-28.23
2,524.00	1.10	6.80	2,519.23	-136.13	0.20	-136.12	4.56	2.19	-469.38
2,555.00	3.40	1.70	2,550.20	-134.92	0.27	-134.91	7.44	7.42	-16.45
2,585.00	5.90	1.70	2,580.10	-132.49	0.34	-132.48	8.33	8.33	0.00
2,617.00	8.70	2.10	2,611.84	-128.42	0.47	-128.42	8.75	8.75	1.25
2,648.00	11.60	2.40	2,642.35	-122.97	0.69	-122.96	9.36	9.35	0.97
2,679.00	15.10	1.70	2,672.51	-115.81	0.94	-115.82	11.30	11.29	-2.26
2,710.00	18.60	0.70	2,702.17	-106.83	1.12	-106.84	11.33	11.29	-3.23
2,741.00	22.50	0.30	2,731.20	-95.95	1.21	-95.96	12.59	12.58	-1.29
2,772.00	26.20	0.00	2,759.43	-83.17	1.24	-83.18	11.94	11.94	-0.97
2,803.00	29.80	359.60	2,786.80	-68.62	1.19	-68.63	11.63	11.61	-1.29
2,835.00	33.60	359.80	2,814.02	-51.81	1.10	-51.82	11.88	11.88	0.63
2,865.00	37.40	359.10	2,838.44	-34.39	0.93	-34.40	12.74	12.67	-2.33
2,896.00	40.90	358.40	2,862.48	-14.83	0.50	-14.84	11.38	11.29	-2.26
2,927.00	44.10	358.80	2,885.33	6.10	-0.01	6.10	10.36	10.32	1.29
2,959.00	46.50	0.10	2,907.84	28.85	-0.22	28.85	8.04	7.50	4.06
2,990.00	49.10	1.30	2,928.66	51.81	0.06	51.80	8.86	8.39	3.87
3,020.00	52.20	0.70	2,947.68	75.00	0.47	74.98	10.45	10.33	-2.00
3,051.00	55.50	359.70	2,965.96	100.03	0.55	100.01	10.96	10.65	-3.23
3,083.00	58.70	359.40	2,983.34	126.89	0.34	126.87	10.03	10.00	-0.94



TDS
Survey Report



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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,114.00	62.20	359.00	2,998.63	153.85	-0.04	153.83	11.35	11.29	-1.29
3,145.00	64.70	0.00	3,012.48	181.58	-0.28	181.56	8.57	8.06	3.23
3,176.00	68.20	0.90	3,024.87	209.99	-0.05	209.97	11.60	11.29	2.90
3,207.00	70.80	1.10	3,035.72	239.02	0.45	238.98	8.41	8.39	0.65
3,238.00	73.90	0.90	3,045.12	268.55	0.97	268.51	10.02	10.00	-0.65
3,270.00	76.70	359.30	3,053.24	299.50	1.02	299.45	10.00	8.75	-5.00
3,301.00	80.00	358.10	3,059.50	329.85	0.33	329.81	11.30	10.65	-3.87
3,332.00	83.40	357.00	3,063.98	360.49	-0.98	360.46	11.52	10.97	-3.55
3,363.00	86.30	356.90	3,066.76	391.32	-2.63	391.31	9.36	9.35	-0.32
3,394.00	87.60	357.00	3,068.41	422.23	-4.27	422.25	4.21	4.19	0.32
3,456.00	88.80	357.50	3,070.36	484.13	-7.25	484.18	2.10	1.94	0.81
3,549.00	90.80	359.10	3,070.68	577.08	-10.01	577.16	2.75	2.15	1.72
3,642.00	92.10	359.80	3,068.33	670.04	-10.90	670.13	1.59	1.40	0.75
3,735.00	90.70	359.40	3,066.05	763.01	-11.55	763.10	1.57	-1.51	-0.43
3,829.00	89.60	358.80	3,065.81	857.00	-13.02	857.09	1.33	-1.17	-0.64
3,923.00	90.50	358.30	3,065.73	950.96	-15.40	951.09	1.10	0.96	-0.53
4,017.00	91.80	357.80	3,063.84	1,044.89	-18.60	1,045.05	1.48	1.38	-0.53
4,111.00	89.90	0.20	3,062.45	1,138.85	-20.24	1,139.03	3.26	-2.02	2.55
4,204.00	90.20	0.20	3,062.36	1,231.85	-19.92	1,232.01	0.32	0.32	0.00
4,297.00	90.10	358.90	3,062.12	1,324.85	-20.65	1,325.01	1.40	-0.11	-1.40
4,390.00	91.50	358.40	3,060.82	1,417.81	-22.84	1,417.99	1.60	1.51	-0.54
4,484.00	90.70	359.90	3,059.02	1,511.78	-24.23	1,511.97	1.81	-0.85	1.60
4,576.00	89.50	0.10	3,058.86	1,603.78	-24.23	1,603.96	1.32	-1.30	0.22
4,670.00	88.40	359.20	3,060.58	1,697.76	-24.80	1,697.94	1.51	-1.17	-0.96
4,763.00	90.00	359.70	3,061.88	1,790.74	-25.70	1,790.92	1.80	1.72	0.54
4,857.00	89.80	358.60	3,062.04	1,884.73	-27.09	1,884.92	1.19	-0.21	-1.17
4,950.00	91.20	358.80	3,061.23	1,977.70	-29.20	1,977.91	1.52	1.51	0.22
5,043.00	89.00	358.60	3,061.07	2,070.67	-31.31	2,070.90	2.38	-2.37	-0.22
5,137.00	90.50	358.90	3,061.48	2,164.64	-33.36	2,164.90	1.63	1.60	0.32
5,230.00	89.50	358.50	3,061.48	2,257.62	-35.47	2,257.90	1.16	-1.08	-0.43
5,324.00	90.60	359.20	3,061.40	2,351.60	-37.36	2,351.89	1.39	1.17	0.74
5,417.00	89.50	359.50	3,061.31	2,444.59	-38.41	2,444.89	1.23	-1.18	0.32
5,510.00	90.80	359.60	3,061.07	2,537.58	-39.14	2,537.88	1.40	1.40	0.11
5,603.00	90.40	359.10	3,060.10	2,630.57	-40.20	2,630.88	0.69	-0.43	-0.54
5,697.00	89.50	359.00	3,060.18	2,724.56	-41.76	2,724.88	0.96	-0.96	-0.11
5,790.00	90.80	358.90	3,059.94	2,817.54	-43.46	2,817.87	1.40	1.40	-0.11
5,883.00	90.00	358.80	3,059.29	2,910.52	-45.33	2,910.87	0.87	-0.86	-0.11
5,976.00	91.20	358.40	3,058.31	3,003.48	-47.60	3,003.86	1.36	1.29	-0.43
6,070.00	90.00	359.40	3,057.33	3,097.46	-49.40	3,097.85	1.66	-1.28	1.06
6,163.00	91.10	359.00	3,056.44	3,190.44	-50.70	3,190.85	1.26	1.18	-0.43
6,256.00	89.70	359.20	3,055.79	3,283.43	-52.16	3,283.84	1.52	-1.51	0.22



TDS
Survey Report



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Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3390.00usft (Silver Oak 3)
Site:	Bradley 8 Fee #5H	MD Reference:	KB @ 3390.00usft (Silver Oak 3)
Well:	SHL: 150' FSL, 1157' FWL, Sec 8, T19S, R26E, Unit M	North Reference:	Grid
Wellbore:	BHL: 330' FNL, 1157' FWL, Sec 8, T19S, R26E, Unit D	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 330' FNL, 1157' FWL, Sec 8, T19S, R26E, Unit D	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,349.00	91.10	359.60	3,055.14	3,376.42	-53.14	3,376.83	1.57	1.51	0.43	
6,442.00	90.00	359.40	3,054.24	3,469.41	-53.95	3,469.83	1.20	-1.18	-0.22	
6,536.00	91.30	359.50	3,053.18	3,563.40	-54.85	3,563.82	1.39	1.38	0.11	
6,628.00	90.00	359.20	3,052.13	3,655.38	-55.89	3,655.81	1.45	-1.41	-0.33	
6,717.00	91.30	359.30	3,051.13	3,744.37	-57.06	3,744.80	1.46	1.46	0.11	
6,810.00	90.40	359.60	3,049.75	3,837.35	-57.95	3,837.79	1.02	-0.97	0.32	
6,904.00	91.80	0.00	3,047.94	3,931.33	-58.28	3,931.76	1.55	1.49	0.43	
6,997.00	91.20	0.30	3,045.51	4,024.30	-58.04	4,024.71	0.72	-0.65	0.32	
7,090.00	90.20	359.20	3,044.37	4,117.29	-58.44	4,117.70	1.60	-1.08	-1.18	
7,184.00	91.30	359.30	3,043.14	4,211.27	-59.67	4,211.69	1.18	1.17	0.11	
7,277.00	90.80	358.20	3,041.44	4,304.23	-61.70	4,304.67	1.30	-0.54	-1.18	
7,370.00	89.70	357.30	3,041.03	4,397.15	-65.35	4,397.64	1.53	-1.18	-0.97	
7,464.00	91.00	357.30	3,040.46	4,491.05	-69.78	4,491.59	1.38	1.38	0.00	
7,558.00	88.90	358.40	3,040.54	4,584.97	-73.31	4,585.56	2.52	-2.23	1.17	
7,651.00	90.20	358.50	3,041.27	4,677.93	-75.82	4,678.55	1.40	1.40	0.11	
7,734.00	91.70	358.10	3,039.89	4,760.88	-78.28	4,761.53	1.87	1.81	-0.48	
Final MWD Survey										
7,786.00	91.70	358.10	3,038.35	4,812.83	-80.01	4,813.49	0.00	0.00	0.00	
Projection to Bit/TD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
7,734.00	3,039.89	4,760.88	-78.28	Final MWD Survey	
7,786.00	3,038.35	4,812.83	-80.01	Projection to Bit/TD	

Checked By: _____ Approved By: _____ Date: _____