

30-015-39144

COG Operating LLC

Eddy County, NM

Tex Mack 11 Federal

Tex Mack 11 Federal #63

Wellbore #1

Survey: MWD Surveys 1

Standard Survey Report

15 September, 2011

Crescent Directional Drilling

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site: Tex Mack 11 Federal
Project:	Eddy County, NM	TVD Reference:	WELL @ 3957 00ft (Original Well Elev)
Site:	Tex Mack 11 Federal	MD Reference:	WELL @ 3957 00ft (Original Well Elev)
Well:	Tex Mack 11 Federal #63	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass R5000 DB Server

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	Tex Mack 11 Federal				
Site Position:		Northing:	672,753.09 ft	Latitude:	32° 50' 54.53 N
From:	Map	Easting:	653,502.30 ft	Longitude:	103° 50' 0.62 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.27 °

Well:	Tex Mack 11 Federal #63					
Well Position	+N/-S	0 00 ft	Northing:	672,753 09 ft	Latitude:	32° 50' 54 53 N
	+E/-W	0 00 ft	Easting:	653,502 30 ft	Longitude:	103° 50' 0 62 W
Position Uncertainty		0 00 ft	Wellhead Elevation:	ft	Ground Level:	3,957 00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/24/2011	7.73	60.71	48,941

Design					Wellbore #1						
Audit Notes:											
Version:		1 0		Phase:		ACTUAL		Tie On Depth:		0 00	
Vertical Section:		Depth From (TVD)		+N/-S		+E/-W		Direction			
		(ft)		(ft)		(ft)		(°)			
		0 00		0 00		0.00		243.48			

Survey Program	From (ft)	To (ft)	Date	Survey (Wellbore)	Tool Name	Description
	100.00	1,956.00	9/15/2011	Gyro Surveys 1 (Wellbore #1)		
	2,069.00	5,225.00		MWD Surveys 1 (Wellbore #1)		

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)
	1,956.00	1.07	113.84	1,955.78	-16.47	-10.65	16.88	0.00	0.00	0.00
	2,069.00	1.00	123.40	2,068.76	-17.43	-8.86	15.71	0.16	-0.06	8.46
	2,163.00	0.60	257.10	2,162.75	-18.00	-8.65	15.78	1.57	-0.43	142.23
	2,257.00	2.50	244.50	2,256.71	-18.99	-10.98	18.31	2.04	2.02	-13.40
	2,350.00	3.90	235.90	2,349.57	-21.64	-15.43	23.47	1.59	1.51	-9.25
	2,445.00	5.60	239.80	2,444.24	-25.78	-22.11	31.30	1.82	1.79	4.11
	2,538.00	5.10	239.80	2,536.83	-30.14	-29.61	39.95	0.54	-0.54	0.00
	2,632.00	6.20	241.80	2,630.37	-34.64	-37.69	49.19	1.19	1.17	2.13
	2,726.00	5.70	241.00	2,723.87	-39.30	-46.25	58.93	0.54	-0.53	-0.85
	2,820.00	5.30	242.30	2,817.43	-43.58	-54.18	67.94	0.45	-0.43	1.38

Crescent Directional Drilling

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Tex Mack 11 Federal
Project:	Eddy County, NM	TVD Reference:	WELL @ 3957.00ft (Original Well Elev)
Site:	Tex Mack 11 Federal	MD Reference:	WELL @ 3957.00ft (Original Well Elev)
Well:	Tex Mack 11 Federal #63	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass R5000 DB Server

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)
2,914.00	5.50	243.50	2,911.02	-47.61	-62.05	76.78	0.24	0.21	1.28
3,008.00	6.80	255.80	3,004.48	-50.99	-71.48	86.72	1.96	1.38	13.09
3,101.00	6.40	254.30	3,096.86	-53.74	-81.81	97.19	0.47	-0.43	-1.61
3,195.00	6.30	252.50	3,190.29	-56.71	-91.77	107.43	0.24	-0.11	-1.91
3,289.00	6.00	244.80	3,283.75	-60.35	-101.13	117.44	0.93	-0.32	-8.19
3,383.00	5.70	238.20	3,377.26	-64.90	-109.55	127.00	0.78	-0.32	-7.02
3,476.00	5.60	246.70	3,469.81	-69.13	-117.64	136.13	0.91	-0.11	9.14
3,571.00	5.60	243.90	3,564.35	-73.00	-126.06	145.39	0.29	0.00	-2.95
3,665.00	5.50	246.30	3,657.91	-76.83	-134.30	154.48	0.27	-0.11	2.55
3,760.00	5.50	244.00	3,752.48	-80.66	-142.56	163.58	0.23	0.00	-2.42
3,854.00	5.50	242.10	3,846.04	-84.74	-150.59	172.58	0.19	0.00	-2.02
3,948.00	5.30	242.30	3,939.63	-88.87	-158.42	181.43	0.21	-0.21	0.21
4,041.00	5.30	241.10	4,032.23	-92.94	-165.98	190.01	0.12	0.00	-1.29
4,135.00	5.40	238.10	4,125.82	-97.38	-173.54	198.76	0.32	0.11	-3.19
4,229.00	6.20	237.40	4,219.34	-102.45	-181.57	208.21	0.85	0.85	-0.74
4,323.00	6.10	243.50	4,312.80	-107.41	-190.31	218.25	0.70	-0.11	6.49
4,416.00	6.10	242.50	4,405.27	-111.90	-199.12	228.13	0.11	0.00	-1.08
4,510.00	6.10	241.90	4,498.74	-116.56	-207.95	238.12	0.07	0.00	-0.64
4,604.00	5.80	243.40	4,592.23	-121.03	-216.61	247.86	0.36	-0.32	1.60
4,698.00	5.80	244.90	4,685.75	-125.18	-225.16	257.36	0.16	0.00	1.60
4,792.00	5.90	241.90	4,779.26	-129.47	-233.72	266.93	0.34	0.11	-3.19
4,886.00	4.90	240.60	4,872.84	-133.71	-241.48	275.77	1.07	-1.06	-1.38
4,980.00	3.50	250.90	4,966.59	-136.62	-247.69	282.63	1.69	-1.49	10.96
5,074.00	1.90	260.70	5,060.48	-137.81	-251.94	286.96	1.77	-1.70	10.43
5,169.00	0.30	188.50	5,155.46	-138.31	-253.53	288.61	1.93	-1.68	-76.00
Last Survey @ 5169.00 MD, 5155.46 TVD, 0.30 INC, 188.50 AZ									
5,225.00	0.30	188.50	5,211.46	-138.60	-253.57	288.78	0.00	0.00	0.00
Straight line Projection to TD @ 5225.00' MD, 5211.46' TVD									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,169.00	5,155.46	-138.31	-253.53	Last Survey @ 5169.00 MD, 5155.46 TVD, 0.30 INC, 188.50 AZ
5,225.00	5,211.46	-138.60	-253.57	Straight line Projection to TD @ 5225.00' MD, 5211.46' TVD

Checked By _____ Approved By _____ Date: _____



Company: Concho Resources
Lease/Well: Tex Mack #11/Fed #63
Location: 6 Miles East of Loco Hills
Rig Name: Silver Oak 1
State/County: New Mexico/Eddy



Latitude: 32.82
GRID North is 0.26 Degrees East of True North
VS-Azi: 243.48 Degrees

Depth Reference : RKB=12 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: tex mack #11 fed #63_ed.ut

Minimum Curvature Method

Report Date/Time: 9/27/2011 / 09:16

Vaughn Energy Services

Fort Worth, TX

817-741-3610

Surveyor: James Proulx

Tex Mack #11 Fed #63

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.49	293.53	100.00	0.17	-0.39	0.27	0.43	293.53	0.49
200.00	0.55	299.32	199.99	0.57	-1.20	0.81	1.33	295.61	0.08
300.00	0.73	270.64	299.99	0.81	-2.25	1.65	2.40	289.87	0.37
400.00	0.92	221.82	399.98	0.22	-3.43	2.97	3.44	273.72	0.70
500.00	1.01	222.33	499.97	-1.02	-4.56	4.53	4.67	257.32	0.09
600.00	1.20	212.02	599.95	-2.56	-5.70	6.24	6.25	245.81	0.27
700.00	1.19	201.52	699.93	-4.42	-6.64	7.91	7.97	236.36	0.22
800.00	1.04	203.13	799.91	-6.22	-7.38	9.38	9.65	229.86	0.16
900.00	0.95	208.25	899.89	-7.79	-8.13	10.75	11.26	226.22	0.13
1000.00	0.81	233.48	999.88	-8.94	-9.09	12.12	12.75	225.47	0.41
1100.00	0.84	229.34	1099.87	-9.84	-10.21	13.53	14.18	226.07	0.06
1200.00	0.97	234.27	1199.86	-10.81	-11.46	15.08	15.75	226.66	0.16
1300.00	0.78	231.19	1299.84	-11.73	-12.67	16.58	17.27	227.21	0.20
1400.00	0.71	256.64	1399.84	-12.30	-13.80	17.84	18.49	228.30	0.33
1500.00	0.67	226.43	1499.83	-12.84	-14.83	19.00	19.61	229.10	0.36
1600.00	0.41	187.65	1599.83	-13.59	-15.29	19.76	20.46	228.37	0.43
1700.00	0.64	136.46	1699.82	-14.35	-14.96	19.79	20.73	226.20	0.50
1800.00	1.21	115.36	1799.81	-15.20	-13.62	18.98	20.41	221.86	0.66

Measured Depth FT	Incl Angle Deg	Drit Direction Deg	TVD FT	+N/-S FT	+E/-W FT	vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	1.22	110.76	1899.79	-16.03	-11.67	17.60	19.83	216.05	0.10
1956.00	1.07	113.84	1955.78	-16.46	-10.63	16.86	19.59	212.87	0.30



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

September 26, 2011

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

RE: Tex Mack 11 Federal #63
2435' FSL & 705' FEL
Sec. 11, T17S, R31E
Eddy County, New Mexico

Dear Sir,

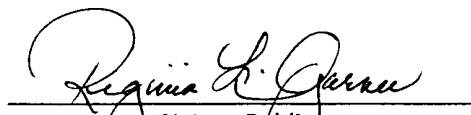
The attached is the Deviation Survey for the above captioned well.

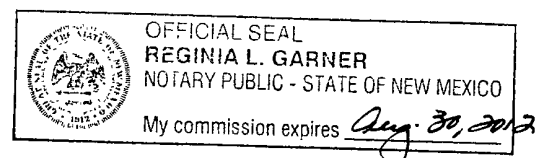
Very truly yours,


Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 26th day of September, 2011.


Regina L. Garner
Notary Public



Pason DataHub Deviation Survey
Well Dossier 1315423812 - Tex Mack 11 Fed #63
#

# Date	Depth	Deviation	Direction
9/7/2011	105	0.10	0.00
9/8/2011	338	0.30	0.00
9/8/2011	545	0.80	0.00
9/8/2011	696	1.10	0.00
9/10/2011	933	0.40	0.00
9/10/2011	1340	0.40	0.00
9/10/2011	1776	0.80	0.00
9/10/2011	1965	0.80	0.00
9/12/2011	2078	1.00	123.40
9/12/2011	2163	0.60	257.10
9/12/2011	2257	2.50	244.50
9/12/2011	2350	3.90	235.90
9/12/2011	2632	6.20	241.80
9/12/2011	2726	5.70	241.00
9/12/2011	2820	5.30	242.30
9/12/2011	2914	5.50	243.50
9/12/2011	3008	6.80	255.80
9/13/2011	3102	6.40	254.30
9/13/2011	3195	6.30	252.50
9/13/2011	3289	6.00	244.80
9/13/2011	3383	5.70	238.20
9/13/2011	3477	5.60	246.70
9/13/2011	3578	5.60	243.90
9/13/2011	3862	5.50	242.10
9/14/2011	4042	5.30	241.10
9/14/2011	4135	5.40	238.10
9/14/2011	4230	6.20	237.40
9/14/2011	4324	6.10	243.50
9/14/2011	4416	6.10	242.50
9/14/2011	4706	5.80	244.90
9/14/2011	4894	4.90	240.60
9/14/2011	4980	3.50	250.90
9/14/2011	5074	1.90	260.70
9/14/2011	5168	0.30	188.50
9/15/2011	5564	0.20	0.00
9/16/2011	6004	0.40	0.00
9/16/2011	6410	0.50	0.00
9/16/2011	6818	0.80	0.00

EOF