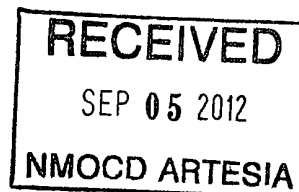


30-015-40011



COG Operating LLC

Eddy County, NM (NAD27 NME)

Tex-Mack 11 Federal #61

Tex-Mack 11 Federal #61

OH - Job #32D0412412

Design: Actual

SDI Standard Survey Report

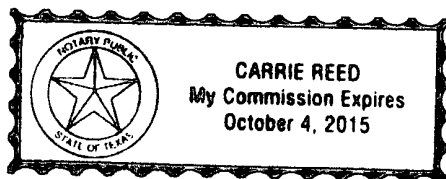
This survey is correct to the best of my knowledge and is supported by actual field data.

Hubert

Notarized this date 14th of May, 2012.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling
Directional Drilling Operations



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Tex-Mack 11 Federal #61
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3961.00usft (Basic #35)
Site:	Tex-Mack 11 Federal #61	MD Reference:	RF @ 3961.00usft (Basic #35)
Well:	Tex-Mack 11 Federal #61	North Reference:	Grid
Wellbore:	OH - Job #32D0412412	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Project	Eddy County, NM (NAD27 NME)		
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 #61		
Site Position:		Northing:	673,780.10 usft
From:	Map	Easting:	650,678.90 usft
Position Uncertainty:	0.00 usft	Slot Radius:	0"
		Latitude:	32° 51' 4.838 N
		Longitude:	103° 50' 33.645 W
		Grid Convergence:	0.27 °

Well	Tex-Mack 11 Federal #61		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 51' 4.838 N
		Longitude:	103° 50' 33.645 W
		Ground Level:	3,949.00 usft

Wellbore	OH - Job #32D0412412		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	04/11/12	7.66
			Dip Angle
			60.70
			Field Strength
			48,878

Design	Actual		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			132.24

Survey Program	Date 04/18/12		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	1,846.00	Gyro (OH - Job #32D0412412)	Keeper
1,960.00	6,831.00	MWD (OH - Job #32D0412412)	MWD
			Description
			Standard Wireline Keeper ver 1.0.2
			MWD - Standard

Survey							
Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.13	32.29	100.00	0.10	0.06	32.29	0.11
200.00	0.76	84.81	200.00	0.25	0.78	72.15	0.82
300.00	1.39	66.84	299.98	0.79	2.56	72.86	2.68
400.00	2.02	59.49	399.93	2.16	5.19	67.40	5.62
500.00	3.07	49.34	499.83	4.80	8.74	61.23	9.97
600.00	4.77	48.97	599.60	9.27	13.91	56.30	16.72
700.00	4.61	50.95	699.26	14.54	20.17	54.22	24.86
800.00	3.42	47.19	799.02	19.09	25.48	53.15	31.84
900.00	3.42	47.00	898.84	23.16	29.85	52.19	37.77
1,000.00	3.34	45.05	998.66	27.25	34.09	51.36	43.64



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Tex-Mack 11 Federal #61
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3961 00usft (Basic #35)
Site:	Tex-Mack 11 Federal #61	MD Reference:	RF @ 3961 00usft (Basic #35)
Well:	Tex-Mack 11 Federal #61	North Reference:	Grid
Wellbore:	OH - Job #32D0412412	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,100 00	3 13	48.70	1,098 50	31 11	38 20	50 84	49 26	
1,200 00	3 01	44 90	1,198 36	34 77	42.11	50 45	54 61	
1,300 00	2.75	49 03	1,298 23	38 20	45 77	50 15	59 62	
1,400 00	3 30	54 08	1,398 09	41 46	49.91	50 28	64 89	
1,500 00	3 72	55 66	1,497 91	44 98	54 92	50 68	70 99	
1,600 00	3 36	52 84	1,597 72	48 58	59 94	50 97	77 15	
1,700 00	3 31	56 65	1,697 55	51 94	64 68	51 24	82 96	
1,800 00	3 48	60.48	1,797 37	55.02	69 74	51 73	88.83	
1,846 00	3 21	58 29	1,843 29	56 39	72 05	51 95	91 49	
Gyro Tie-in								
1,960 00	2 64	60 91	1,957 14	59 34	77 06	52 40	97 26	
2,030 00	3.08	61 88	2,027 06	61 01	80 12	52 71	100 71	
2,094 00	2 81	73.04	2,090 97	62 28	83 14	53 16	103 88	
2,158 00	2 90	78 58	2,154 89	63 06	86 23	53 82	106 82	
2,221 00	3 08	90 71	2,217 81	63 35	89 48	54 70	109 64	
2,284 00	3 65	105 85	2,280 70	62 78	93 10	56 01	112 29	
2,348 00	4 48	114 97	2,344 54	61 17	97 33	57 85	114 96	
2,411 00	4 72	121 87	2,407 34	58 76	101 76	59 99	117 51	
2,475 00	5 70	127 41	2,471 07	55 44	106 52	62 50	120 09	
2,538 00	6 68	128 50	2,533 70	51 26	111 87	65 38	123 06	
2,602 00	7.56	128 94	2,597 21	46.30	118 06	68 59	126 82	
2,666 00	8 62	132 02	2,660 57	40 44	124 90	72 06	131 28	
2,729 00	8 97	135 44	2,722 83	33 78	131 85	75 63	136 11	
2,825 00	8 27	135 27	2,817 75	23 54	141 96	80 58	143 90	
2,888 00	8 18	139 75	2,880 10	16 90	148 05	83 49	149 01	
2,952 00	8 53	144 23	2,943 42	9 58	153 77	86 44	154.06	
3,016 00	8 88	147 48	3,006 68	1 56	159 20	89 44	159 20	
3,079 00	9.06	146 61	3,068 91	-6 68	164 54	92 32	164 67	
3,142 00	8 97	146 17	3,131 14	-14 90	170 00	95 01	170 66	
3,206 00	9 15	144 94	3,194 34	-23 21	175 70	97 53	177 23	
3,270 00	9 23	144 67	3,257 52	-31 56	181 60	99 86	184 32	
3,333 00	8 97	146 08	3,319 72	-39 76	187 26	101 99	191 43	
3,397 00	9 23	146 17	3,382 92	-48 17	192 90	104 02	198 82	
3,492 00	9 32	146 69	3,476.67	-60 92	201 37	106 83	210 38	
3,588 00	9 32	147 57	3,571 41	-73 98	209 80	109 42	222 47	
3,651 00	9 23	148 28	3,633 58	-82 58	215 20	111 00	230 50	
3,746 00	9.35	146 35	3,727 34	-95 49	223 48	113.14	243 02	
3,842 00	9 32	141 86	3,822 07	-108 10	232 60	114 93	256 49	
3,937 00	9 50	141 51	3,915 79	-120 28	242.23	116 41	270 45	
4,032 00	9 50	143 09	4,009 49	-132 69	251 82	117 79	284 64	
4,125 00	9 23	141 42	4,101 25	-144 65	261 08	118 99	298 47	
4,221 00	8 97	142 04	4,196 04	-156 57	270 48	120 07	312 53	
4,315 00	9 23	143 44	4,288 86	-168.41	279 48	121 07	326 30	
4,411 00	8.53	144 85	4,383 71	-180 41	288 17	122 05	339 98	
4,506 00	8 88	145 11	4,477 61	-192 19	296 42	122 96	353 27	



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Tex-Mack 11 Federal #61
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3961 00usft (Basic #35)
Site:	Tex-Mack 11 Federal #61	MD Reference:	RF @ 3961 00usft (Basic #35)
Well:	Tex-Mack 11 Federal #61	North Reference:	Grid
Wellbore:	OH - Job #32D0412412	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
4,601.00	8.79	139.49	4,571.49	-203.72	305.33	123.71	367.05
4,696.00	8.88	140.89	4,665.36	-214.93	314.67	124.33	381.06
4,791.00	9.06	142.48	4,759.20	-226.55	323.85	124.98	395.22
4,886.00	8.79	137.82	4,853.05	-237.86	333.28	125.52	409.45
4,981.00	8.79	139.05	4,946.93	-248.72	342.91	125.95	423.61
5,076.00	8.97	140.37	5,040.79	-259.91	352.39	126.41	437.87
5,172.00	9.23	140.28	5,135.58	-271.60	362.08	126.87	452.62
5,267.00	8.53	140.63	5,229.45	-282.90	371.42	127.30	466.89
5,361.00	8.66	141.57	5,322.39	-293.84	380.24	127.70	480.54
5,457.00	8.79	141.42	5,417.28	-305.23	389.31	128.10	494.70
5,552.00	8.97	142.77	5,511.14	-316.80	398.31	128.50	508.94
5,615.00	8.62	140.63	5,573.40	-324.36	404.28	128.74	518.32
5,710.00	8.33	139.62	5,667.36	-335.11	413.26	129.04	532.05
5,805.00	8.52	140.02	5,761.34	-345.74	422.24	129.31	545.73
5,900.00	8.60	140.70	5,855.28	-356.63	431.26	129.59	559.61
5,995.00	8.79	141.95	5,949.19	-367.85	440.23	129.88	573.68
6,090.00	9.02	143.39	6,043.04	-379.54	449.14	130.20	588.03
6,186.00	8.86	141.71	6,137.88	-391.38	458.21	130.50	602.61
6,281.00	9.15	141.68	6,231.70	-403.05	467.43	130.77	617.20
6,377.00	9.15	138.17	6,326.48	-414.73	477.25	130.99	632.27
6,472.00	8.35	137.99	6,420.38	-425.48	486.91	131.15	646.62
6,566.00	8.35	139.05	6,513.38	-435.71	495.95	131.30	660.16
6,660.00	8.53	137.90	6,606.36	-446.04	505.10	131.45	673.85
6,724.00	7.91	138.43	6,669.71	-452.85	511.20	131.54	682.93
6,783.00	7.83	139.31	6,728.15	-458.94	516.51	131.62	690.95
Last MWD Survey							
6,831.00	7.83	139.31	6,775.70	-463.89	520.78	131.69	697.43
Projection to Bit - PBHL-TEX Mack 11 Fed #61							

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,846.00	1,843.29	56.39	72.05	Gyro Tie-in
6,783.00	6,728.15	-458.94	516.51	Last MWD Survey
6,831.00	6,775.70	-463.89	520.78	Projection to Bit



Scientific Drilling
Directional Drilling Operations

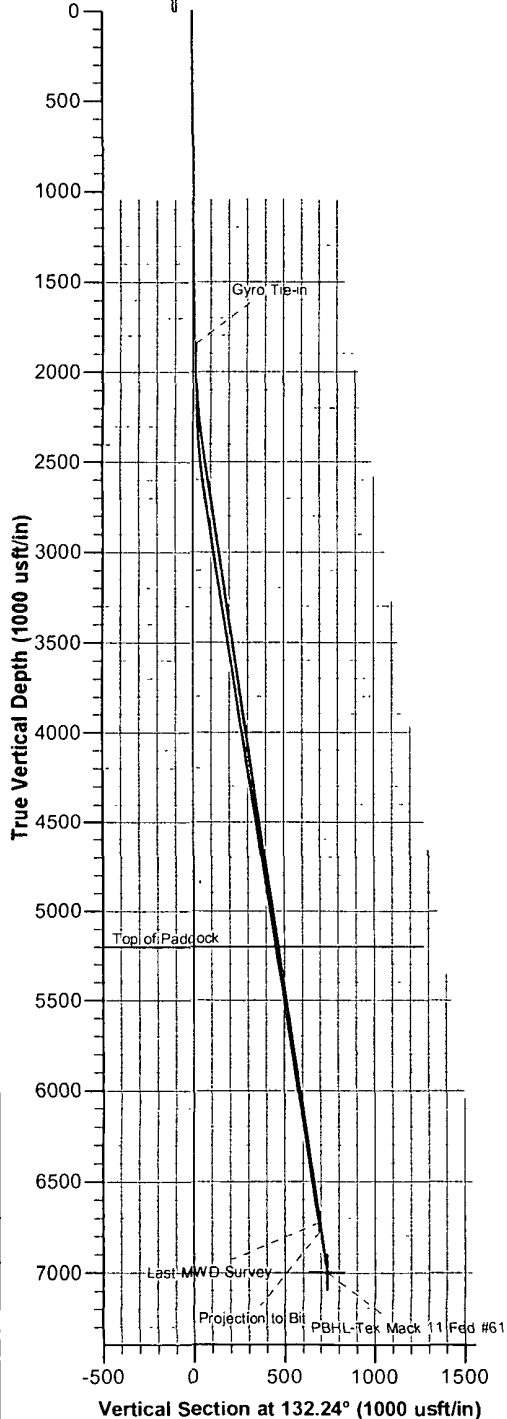
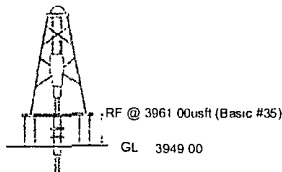


To convert Magnetic North to Grid, Add 7.39°
To convert True North to Grid Subtract 0.27°

Azimuths to Grid North
True North -0.27°
Magnetic North 7.39°

Magnetic Field
Strength 48877.9nT
Dip Angle 60.70°
Date 04/11/2012
Model IGRF2010

Tex-Mack 11 Federal #61
Eddy County, NM (NAN27 NME)
Northing: (Y) 673780.10
Easting: (X) 650678.90
Plan #2 vs Actual - 7-7/8" Hole



WELL DETAILS: Tex-Mack 11 Federal #61

+N/-S	+E/-W	Northing	Ground Level	Ground Level	Ground Level	Ground Level
0.00	0.00	673780.10	Easting	32° 51' 4.838 N	3949.00	Longitude
			650678.90		Latitude	103° 50' 33.645 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSecl	Target
1	1846.00	3.21	58.29	1843.29	56.39	72.05	0.00	0.00	15.42	
2	1950.00	3.21	58.29	1947.13	59.45	77.00	0.00	0.00	17.03	
3	2385.08	8.52	140.78	2380.30	40.84	107.81	2.00	103.78	52.35	
4	7056.37	8.52	140.78	7000.00	-495.50	545.60	0.00	0.00	737.02	PBHL-Tex Mack 11 Fed #61

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL-Tex Mack 11 Fed #61	7000.00	-495.50	545.60	673284.60	651224.50	32° 50' 59.910 N	103° 50' 27.276 W
- plan hits target center							

SITE DETAILS: Tex-Mack 11 Federal #61

Site Centre Northing	673780.10
Easting	650678.90
Positional Uncertainty	0.00
Convergence	0.27
Local North	Grid

PROJECT DETAILS: Eddy County, NM (NAN27 NME)

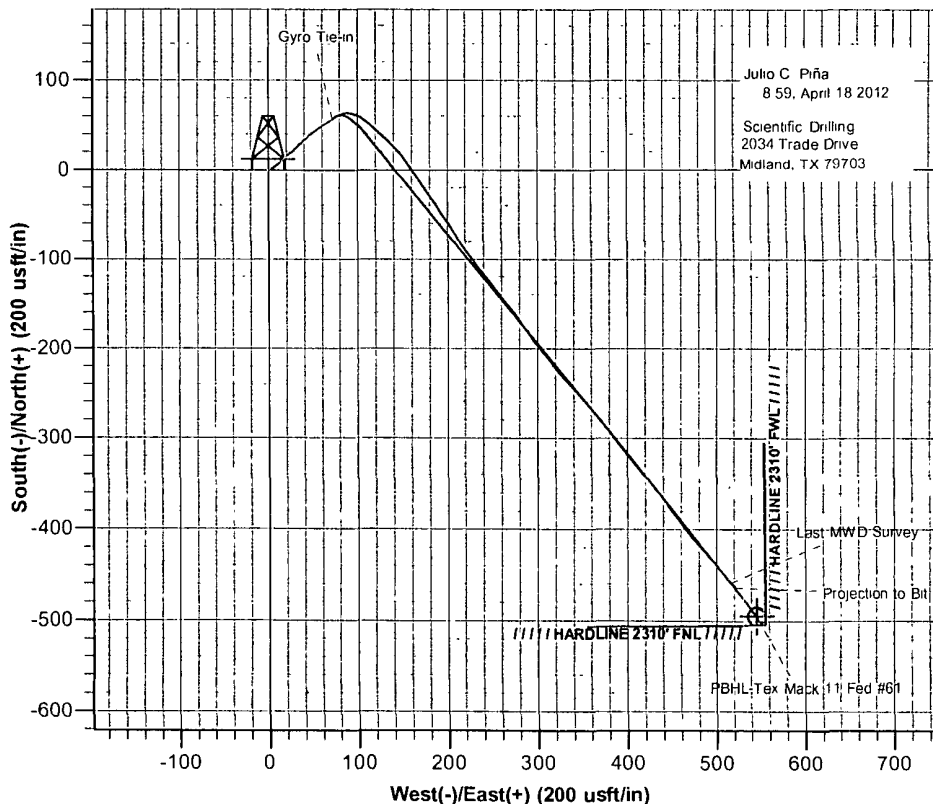
Geodetic System	US State Plane 1927 (Exact solution)
Datum	NAD 1927 (NADCON CONUS)
Ellipsoid	Clarke 1866
Zone	New Mexico East 3001
System Datum	Mean Sea Level

FORMATION TOP DETAILS

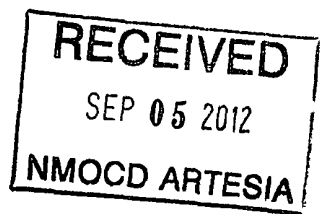
TVDPath	MDPath	Formation	DipAngle	DipDir
5200.00	5236.27	Top of Paddock	0.00	

LEGEND

- Tex-Mack 11 Federal #61, OH - Job #32D0412412, Gyro
- Tex-Mack 11 Federal #61, OH - Job #32D0412412, MWD
- Plan #2 - 7-7/8" Hole



OPERATOR _____ COG _____
WELL/LEASE Tex Mack 11 Federal 61
COUNTY Eddy



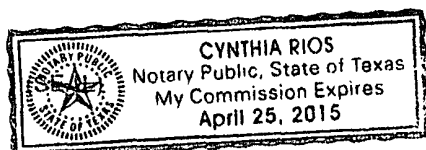
STATE OF NEW MEXICO
DEVIATION REPORT

167	0.93
319	0.75
619	1.00
927	1.36
1372	3.34
1625	3.52
1911	2.99
1960	2.64
2030	3.08
2094	2.81
2158	2.90
2221	3.08
2284	3.65
2348	4.48
2475	5.70
2538	6.68
2602	7.56
2666	8.62
2729	8.97
2825	8.27
2952	8.53
3016	8.88
3097	9.06
3142	8.97
3206	9.15
3270	9.23
3492	9.32
3588	9.32
3651	9.23
3746	9.35
3842	9.32
3910	9.50
4031	9.50
4125	9.23
4221	8.97
4315	9.23
4411	8.53
4506	8.88
4601	8.79
4696	8.88
4791	9.06
4886	8.79
4981	8.79
5076	8.97
5172	9.23
5267	8.53
5361	8.66
5457	8.79
5552	8.97
5615	8.62
5710	8.33
5805	8.52
5900	8.60
5995	8.79
6090	9.02
6186	8.86
6281	9.15
6377	9.15
6472	8.35
6660	8.53
6724	7.91
6783	7.83

SIGNED BY: *Ron Scandolari*
RON SCANDOLARI, VP-CONTRACT DRILLING

STATE OF TEXAS
COUNTY OF MIDLAND

ON THIS 23rd DAY OF April, 2012, BEFORE ME, C RIOS, A NOTARY
PUBLIC, PERSONALLY APPEARED RON SCANDOLARI, WHO ACKNOWLEDGED AND EXECUTED
THIS DOCUMENT. WITNESS MY HAND AND OFFICIAL SEAL.



Cynthia Rios
NOTARY PUBLIC