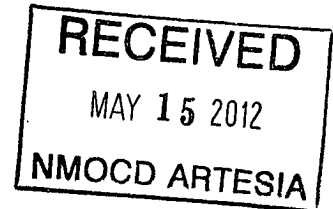




PO Box 1370  
Artesia, NM 88211-1370  
(575) 748-1288

30-015-39882



March 13, 2012

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

RE: Conoco 8 State #4  
1380' FSL & 1650' FEL  
Sec. 8, T17S, R29E  
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".

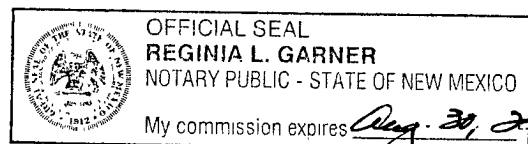
Eddie C. LaRue  
Operations Manager

State of New Mexico }  
County of Eddy }

The foregoing was acknowledged before me this 13<sup>th</sup> day of March, 2012.

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

---

Notary Public

Conoco 8 State #4

Date	Depth	Dev/Inc	Dir/AZ	TVD
3/5/2012	100	0.20		
3/5/2012	192	0.70		
3/5/2012	283	1.20		
3/6/2012	343	1.20		
3/6/2012	466	1.20		
3/6/2012	651	1.40		
3/6/2012	839	1.00		
3/7/2012	1058	2.58	347.20	
3/7/2012	1185	4.17	22.51	
3/7/2012	1249	4.60	9.82	
3/7/2012	1312	4.95	2.56	
3/8/2012	1890	7.36	339.70	
3/8/2012	1985	8.22	343.30	
3/8/2012	2080	7.33	340.60	
3/8/2012	2271	8.33	340.58	
3/8/2012	2557	8.12	344.67	
3/8/2012	2652	8.10	343.92	
3/8/2012	2748	8.19	350.46	
3/8/2012	2843	8.09	351.46	
3/9/2012	3223	7.06	352.50	
3/9/2012	3318	6.88	354.10	
3/9/2012	3414	6.54	352.80	
3/9/2012	3795	2.35	342.70	
3/9/2012	3986	0.99	321.20	
3/9/2012	4050	0.38	6.56	
3/9/2012	4146	0.28	43.57	
3/10/2012	4403	0.20		
3/11/2012	4856	0.30		
3/11/2012	5197	0.30		
3/11/2012	5352	0.60		



## **COG Operating LLC**

**Eddy County, NM (NAN27 NME)**

**Conoco 8 State #4**

**Conoco 8 State #4**

**OH**

**Design: Actual**

## **Standard Survey Report**

**10 March, 2012**





**SDI**  
Survey Report



<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Site Conoco 8 State #4
<b>Project:</b>	Eddy County, NM (NAN27 NME)	<b>TVD Reference:</b>	RF @ 3634 00usft (SO #4)
<b>Site:</b>	Conoco 8 State #4	<b>MD Reference:</b>	RF @ 3634 00usft (SO #4)
<b>Well:</b>	Conoco 8 State #4	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000 1 Single User Db

<b>Project:</b>	Eddy County, NM (NAN27 NME)		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	New Mexico East 3001		

<b>Site:</b>	Conoco 8 State #4				
<b>Site Position:</b>		<b>Northing:</b>	671,388.60 usft	<b>Latitude:</b>	32° 50' 43.807 N
<b>From:</b>	Map	<b>Easting:</b>	573,736.50 usft	<b>Longitude:</b>	104° 5' 35.666 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.13 °

<b>Well:</b>	Conoco 8 State #4					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	671,388.60 usft	<b>Latitude:</b>	32° 50' 43.807 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	573,736.50 usft	<b>Longitude:</b>	104° 5' 35.666 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	3,616.00 usft

<b>Wellbore:</b>	OH				
<b>Magnetics</b>	<b>Model Name:</b>	<b>Sample Date:</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	03/06/12	7.79	60.65	48,858

<b>Design:</b>	Actual				
<b>Audit Notes:</b>		<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Version:</b>	1.0				
<b>Vertical Section</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	351.12	

<b>Survey Program</b>	<b>Date:</b>	03/10/12			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
100.00	810.00	Gyro (OH)	Keeper	Standard Wireline Keeper ver 1.0.2	
930.00	4,227.00	MWD (OH)	MWD	MWD - Standard	

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
100.00	0.55	164.58	100.00	-0.46	0.13	-0.48	0.55	0.55	0.00
200.00	1.23	160.91	199.99	-1.94	0.61	-2.01	0.68	0.68	-3.67
300.00	1.21	167.97	299.96	-3.99	1.18	-4.12	0.15	-0.02	7.06
400.00	1.30	157.68	399.94	-6.07	1.83	-6.28	0.24	0.09	-10.29
500.00	1.51	139.23	499.91	-8.12	3.12	-8.50	0.50	0.21	-18.45
600.00	1.44	123.41	599.88	-9.81	5.03	-10.46	0.41	-0.07	-15.82
700.00	1.37	116.20	699.85	-11.03	7.15	-12.00	0.19	-0.07	-7.21
800.00	1.19	112.54	799.82	-11.95	9.18	-13.23	0.20	-0.18	-3.66
810.00	1.12	110.65	809.82	-12.03	9.37	-13.33	0.80	-0.70	-18.90



<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Site Conoco 8 State #4
<b>Project:</b>	Eddy County, NM (NAN27 NME)	<b>TVD Reference:</b>	RF @ 3634 00usft (SO #4)
<b>Site:</b>	Conoco 8 State #4	<b>MD Reference:</b>	RF @ 3634 00usft (SO #4)
<b>Well:</b>	Conoco 8 State #4	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000 1 Single User Db

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)
<b>Gyro Tie-in</b>									
930 00	1 07	90 37	929 80	-12 45	11 59	-14 09	0 32	-0 04	-16 90
994 00	1 77	79 92	993 78	-12 28	13 16	-14 16	1 16	1 09	-16 33
1,058 00	2.58	52 65	1,057 73	-11 23	15.28	-13 45	2 02	1 27	-42 61
1,121 00	3 49	37 62	1,120 65	-8 85	17.57	-11 46	1 91	1 44	-23 86
1,185 00	4 17	22 51	1,184 50	-5 16	19 65	-8 13	1 89	1 06	-23 61
1,249 00	4 60	9 82	1,248 32	-0 48	20 98	-3 71	1 65	0 67	-19 83
1,312 00	4 95	2 56	1,311 10	4 72	21.53	1 34	1 11	0 56	-11 52
1,376 00	5 82	355 78	1,374 82	10 72	21 42	7 28	1 68	1 36	-10.59
1,439 00	6 67	348 61	1,437 44	17 49	20 46	14 12	1 83	1 35	-11 38
1,502.00	7 33	348 37	1,499 97	25 02	18 93	21 79	1 05	1 05	-0 38
1,604 00	8 47	348 53	1,601 00	38 75	16 12	35 80	1 12	1 12	0 16
1,699 00	7 66	345 97	1,695 06	51 75	13 20	49 09	0 93	-0 85	-2 69
1,795 00	8 36	344 69	1,790 13	64 69	9 80	62 40	0 75	0 73	-1 33
1,890 00	7 36	339 75	1,884 23	77 06	5 87	75 23	1 27	-1 05	-5 20
1,985 00	8 22	343 39	1,978 36	89 28	1 83	87 92	1 04	0 91	3 83
2,080 00	7.33	340 63	2,072 48	101 50	-2 13	100 61	1 02	-0 94	-2 91
2,176 00	8.54	342 19	2,167 56	114 07	-6 34	113 68	1 28	1 26	1 63
2,271 00	8 33	340.58	2,261 54	127 27	-10 78	127 41	0 33	-0 22	-1 69
2,367 00	7 95	338 88	2,356 57	140 02	-15 49	140 74	0 47	-0 40	-1 77
2,462 00	7 85	339 09	2,450 67	152 21	-20 17	153 50	0 11	-0 11	0 22
2,557 00	8 12	344 67	2,544 75	164 74	-24 26	166 51	0 86	0 28	5 87
2,652 00	8 10	343 92	2,638 80	177 64	-27.89	179 82	0 11	-0 02	-0 79
2,748 00	8 19	350 46	2,733 83	190 89	-30 89	193 37	0 97	0 09	6 81
2,843 00	8 09	351 46	2,827 87	204 17	-33 01	206 82	0 18	-0 11	1 05
2,938 00	8 08	350 62	2,921 93	217 37	-35 09	220 18	0 12	-0 01	-0 88
3,033 00	8 05	350.94	3,015 99	230 52	-37 22	233 51	0 06	-0 03	0 34
3,128 00	8 05	351 15	3,110 05	243 66	-39 29	246 81	0 03	0 00	0 22
3,223 00	7 06	352 56	3,204 23	256 03	-41 07	259 30	1 06	-1 04	1 48
3,318 00	6 88	354 15	3,298 53	267 48	-42 41	270 82	0 28	-0 19	1 67
3,414 00	6 54	352 80	3,393 87	278 62	-43 68	282 02	0 39	-0 35	-1 41
3,509 00	5 75	352 05	3,488 32	288 70	-45 02	292 19	0 84	-0 83	-0 79
3,604 00	4 61	346 68	3,582 93	297 13	-46 55	300 75	1 30	-1 20	-5 65
3,701 00	3 49	346 17	3,679 69	303 79	-48 16	307 58	1 16	-1 15	-0 53
3,795 00	2 35	342 74	3,773 56	308 41	-49 41	312 34	1 23	-1 21	-3 65
3,891 00	2 12	331 53	3,869 49	311 85	-50 84	315 96	0 51	-0 24	-11 68
3,986 00	0 99	321.28	3,964 46	314 03	-52 20	318 33	1 22	-1 19	-10 79
4,050 00	0 38	6.56	4,028 45	314 68	-52 52	319 01	1 21	-0 95	70 75
4,146 00	0 28	43 57	4,124 45	315.16	-52 32	319 46	0 24	-0 10	38 55
4,177 00	0.35	43 70	4,155 45	315 29	-52 20	319 56	0 23	0 23	0 42
<b>Last MWD Survey</b>									
4,227 00	0 35	43 70	4,205.45	315 51	-51 99	319 75	0 00	0 00	0 00
<b>Projection to Bit</b>									



SDI  
Survey Report



<b>Company:</b>	COG Operating LLC	<b>Local Co-ordinate Reference:</b>	Site Conoco 8 State #4
<b>Project:</b>	Eddy County, NM (NAN27 NME)	<b>TVD Reference:</b>	RF @ 3634 00usft (SO #4)
<b>Site:</b>	Conoco 8 State #4	<b>MD Reference:</b>	RF @ 3634 00usft (SO #4)
<b>Well:</b>	Conoco 8 State #4	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

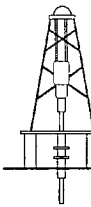
Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/S (usft)	+E/W (usft)	
810 00	809 82	-12 03	9 37	Gyro Tie-in
4,177 00	4,155 45	315 29	-52 20	Last MWD Survey
4,227 00	4,205 45	315 51	-51 99	Projection to Bit

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



Azimuths to Grid North  
 True North -0 13"  
 Magnetic North 7 06"  
 Magnetic Field  
 Strength 48858 Gauss  
 Dip Angle 60 65"  
 Date 03/08/2012  
 Model IGRF2010

Conoco 8 State #4  
 Eddy County, NM (NAN27 NME)  
 Northing: (Y) 671388.60  
 Easting: (X) 573736.50  
 Plan #2 vs Actual - 7-7/8" Hole



RF @ 3634 00usft (SO #4)  
 GL 3618 00

WELL DETAILS Conoco 8 State #4							
+N/-S	+E/-W	Northing	Ground Level	Easting	Latitude	Longitude	Spot
0 00	0 00	671388 60	3618 00	573736 50	32° 50' 43 807 N	104° 5' 35 666 W	

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSecl	Target
1	810 00	1 12	110 65	809 82	-12 03	9 37	0 00	0 00	-13 33	
2	850 00	1 12	110 65	849 78	-12 99	11 93	0 00	0 00	-14 68	
3	1362 35	7 60	348 88	1361 00	-12 40	10 44	2 00	-126 30	10 84	
4	3541 49	7 60	348 88	3520 99	295 29	-45 14	0 00	0 00	298 72	T1-Conoco 8 State #4
5	3921 82	0 00	0 00	3900 00	320 00	-50 00	2 00	186 00	323 88	PBHL-Conoco 8 State #4
6	5421 82	0 00	0 00	5400 00	320 00	-50 00	0 00	0 00	323 88	

DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
T1-Conoco 8 State #4	3900 00	320 00	-50 00	671708 60	573688 50	32° 50' 48 975 N	104° 5' 36 244 W	Point	
- plan hits target center									
PBHL-Conoco 8 State #4	5400 00	320 00	-50 00	671708 60	573688 50	32° 50' 48 975 N	104° 5' 36 244 W	Circle (Radius 50 00)	
- plan hits target center									

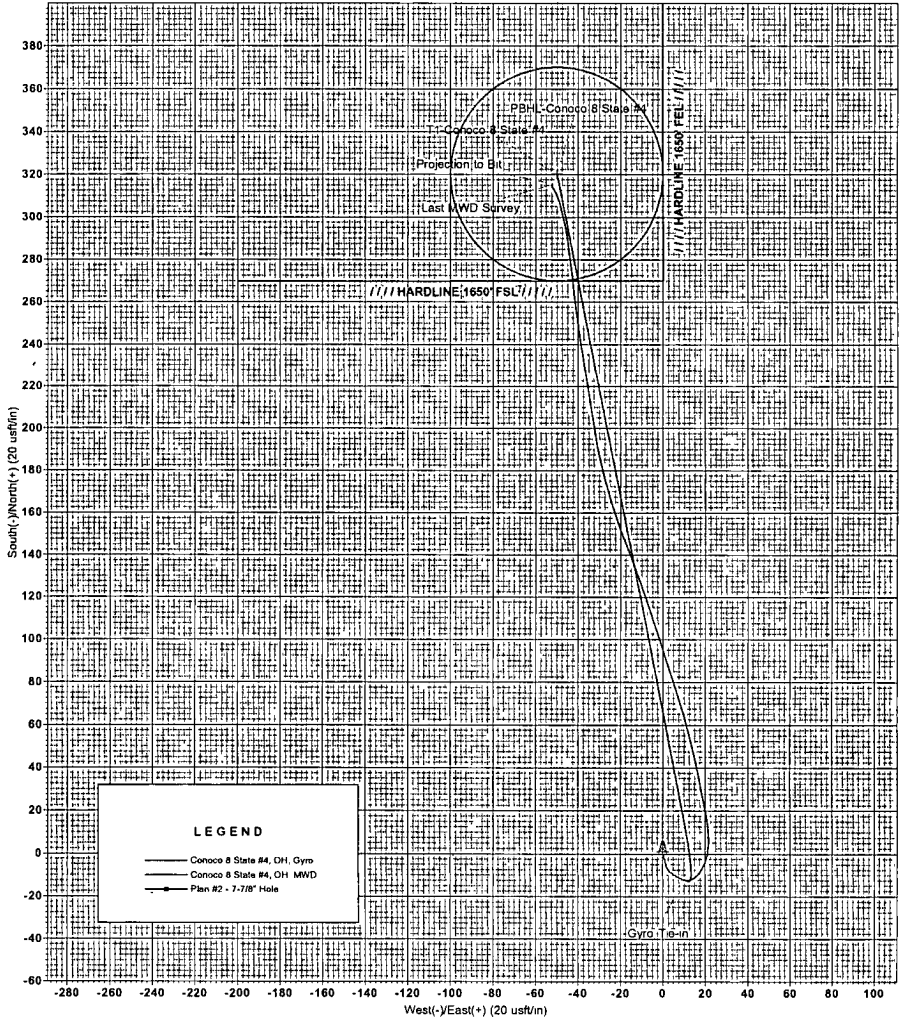
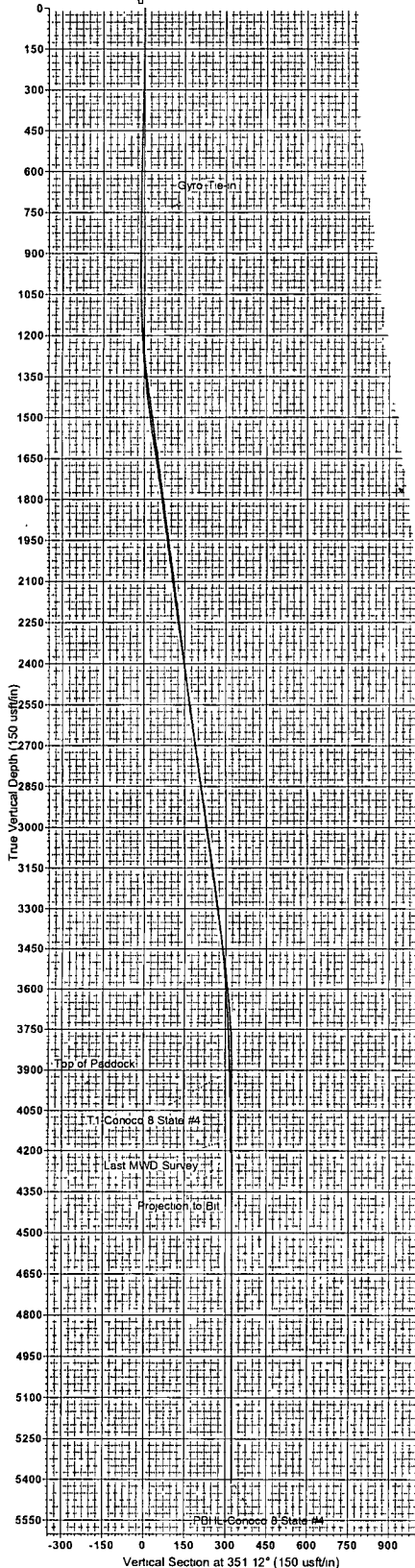
SITE DETAILS Conoco 8 State #4				
Site Centre Northing	671388 60			
Easting	573736 50			
Positional Uncertainty	0 00			
Convergence	0 13			
Local North Grid				

PROJECT DETAILS: Eddy County, NM (NAN27 NME)				
Geoid System	US State Plane 1927 (Exact solution)			
Datum	NAD 1927 (NADCON CONUS)			
Ellipsoid	Clarke 1856			
Zone Name	New Mexico East 3001			
System Datum	Mean Sea Level			

FORMATION TOP DETAILS				
TVDPath	MOPPath	Formation	DipAngle	DipDir
3900 00	3921 82	Top of Paddeck	0 00	

Map System	US State Plane 1927 (Exact solution)
Datum	NAD 1927 (NADCON CONUS)
Ellipsoid	Clarke 1856
Zone Name	New Mexico East 3001
Local Origin	Site Conoco 8 State #4 Grid North
Latitude	32° 50' 43 807 N
Longitude	104° 5' 35 666 W
Grid East	573736 50
Grid North	671388 60
Scale Factor	1 000
Geomagnetic Model	IGRF2010
Sample Date	05-Mar-12
Magnetic Declination	7 79"
Dip Angle from Horizontal	60 65"
Magnetic Field Strength	48858
To convert Magnetic North to Grid Add 7 65"	
To convert Magnetic North to True North Add 7 79" East	
To convert True North to Grid Subtract 0 13"	

CASING DETAILS			
TVD	MD	Name	Size
850 00	850 19	8-5/8" Casing	8-5/8"



LEGEND	
—	Conoco 8 State #4, OH, Gyro
—	Conoco 8 State #4, OH, MWD
—	Plan #2 - 7-7/8" Hole