

District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)		WELL API NO. 30-015-39950
1. Type of Well: Oil Well ☒ Gas Well ☐ Other ☐		5. Indicate Type of Lease STATE ☒ FEE ☐
2. Name of Operator COG Operating LLC		6. State Oil & Gas Lease No. BO3105 0009
3. Address of Operator One Concho Center - 600 W Illinois Ave Midland, TX 79701		7. Lease Name or Unit Agreement Name Burkett 16 State
4. Well Location Unit Letter B : 990 feet from the NORTH line and 1650 feet from the EAST line Section 16 Township 17S Range 31E NMPM County EDDY		8. Well Number 16H
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3849'		9. OGRID Number 229137
10. Pool name or Wildcat Fren; Glorieta-Yeso 26770		

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
DOWNHOLE COMMINGLE ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ P AND A ☐
CASING/CEMENT JOB ☐

OTHER: **Change TVD and add Dual Lateral** ☒

OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Type	Hole Size	Casing Type	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	48	375	400	0
Int1	12.25	9.625	36	1700	500	0
Int 2	8.75	7	26	5623	900	0
Prod	6.125	4.5	11.6	9198	0	0
Prod	6.125	4.5	11.6	8798	0	0

COG proposes to drill a 17 1/2" hole to 375' with a 8.5 ppg, 28 viscosity fresh water mud system. Set 13 3/8" casing and cement to surface. Drill a 12 1/4" hole to 1700' with a 10 ppg, 30 viscosity brine water mud system. Set 9 5/8" casing and cement to surface. Drill an 8 3/4" hole to 5623'. Run open hole logs and evaluate hole. Set 7" casing and cement to surface. At 5623' kick off and drill an 6 1/8" hole, building curve over +/- 470' of horizontal section in a westerly direction to +/- 6381' MD. Drill a 6 1/8" lateral to new BHL at 6051' TVD +/- 9198' MD. Run 4 1/2" production liner in uncemented open hole lateral to +/- 9198' MD, utilizing open hole packers and liner top packer for isolation. Liner overlap only 125' to facilitate pumping. Set retrievable bridge plug at +/- 5400' MD. Set hydraulic actuated whipstock at +/- 5173' MD. Mill window to 5223' MD. Kick off at 5223' and drill an 6 1/8" hole, building curve over +/- 470' of horizontal section in a westerly direction to +/- 5981' MD 5700' TVD. Drill a 6 1/8" lateral to new BHL at 5651' TVD +/- 8798' MD. Run 4 1/2" production liner in uncemented open hole lateral to +/- 8798' MD 5651' TVD, utilizing open hole packers. J off of liner and leave top of liner at +/- 5651' TVD (+/- 30' outside of casing window).
Upper Lateral and Lower Lateral Directional Plans are attached.

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE **Permitting Tech**

Type or print name **Kelly J. Holly** E-mail address: **kholly@concho.com**

DATE **10/22/2012**

PHONE: **432-685-4384**

For State Use Only

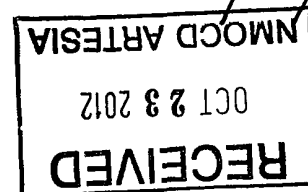
APPROVED BY:

TITLE

DATE

Conditions of Approval (if any):

Please provide wellbore schematic upon completion





COG Operating LLC

Eddy County, NM

Burkett 16 State

#16H

Upper Lateral

Plan: UL Plan #1

Standard Planning Report

09 October, 2012

Surface: 990' FNL, 1650' FEL, Sec 16, T17S, R31E, Unit B
BHL: 990' FNL, 330' FWL, Sec 16, T17S, R31E, Unit D





Planning Report



Database: Houston R5000 Database
Company: COG Operating LLC
Project: Eddy County, NM
Site: Burkett 16 State
Well: #16H
Wellbore: Upper Lateral
Design: UL Plan #1

Local Co-ordinate Reference: Well #16H
TVD Reference: Well @ 3863.0usft (UDI #40 - 14' KB)
MD Reference: Well @ 3863.0usft (UDI #40 - 14' KB)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature

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	Burkett 16 State			
Site Position:		Northing:	669,419.27 usft	Latitude: 32° 50' 22.075 N
From:	Map	Easting:	641,980.82 usft	Longitude: 103° 52' 15.830 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence: 0.25°

Well	#16H, Dual Lateral			
Well Position	+N-S	-173.4 usft	Northing:	669,245.90 usft
	+E-W	37.3 usft	Easting:	642,018.10 usft
Position Uncertainty		2.0 usft	Wellhead Elevation:	Ground Level: 3,849.0 usft

Wellbore	Upper Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/19/2012	7.62	60.67	48,824

Design	UL Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.0	0.0	0.0	269.63

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,222.5	0.00	0.00	5,222.5	0.0	0.0	0.00	0.00	0.00	0.00	
5,981.0	91.00	269.63	5,700.0	-3.1	-485.9	12.00	12.00	0.00	269.63	
8,797.5	91.00	269.63	5,650.8	-21.3	-3,301.9	0.00	0.00	0.00	0.00	PBHL-UL (B#16H)



Planning Report



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MD Reference: Well @ 3863.0usft (UDI #40 - 14' KB)
North Reference: Grd
Survey Calculation Method: Minimum Curvature

Planned 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,222.5	0.00	0.00	5,222.5	0.0	0.0	0.0	0.00	0.00	0.00



Planning Report



Database: Houston R5000 Database
Company: COG Operating LLC
Project: Eddy County, NM
Site: Burkett 16 State
Well: #16H
Wellbore: Upper Lateral
Design: UL Plan #1

Local Co-ordinate Reference: Well #16H
TVD Reference: Well @ 3863.0usft (UDI #40 - 14' KB)
MD Reference: Well @ 3863.0usft (UDI #40 - 14' KB)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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)
KOP - 5222.5' MD, 5222.5' TVD, 0.00° INC, 0.00° AZI, 0.0° VS									
5,225.0	0.30	269.63	5,225.0	0.0	0.0	0.0	12.00	12.00	0.00
5,250.0	3.30	269.63	5,250.0	0.0	-0.8	0.8	12.00	12.00	0.00
5,275.0	6.30	269.63	5,274.9	0.0	-2.9	2.9	12.00	12.00	0.00
5,300.0	9.30	269.63	5,299.7	0.0	-6.3	6.3	12.00	12.00	0.00
5,325.0	12.30	269.63	5,324.2	-0.1	-11.0	11.0	12.00	12.00	0.00
5,350.0	15.30	269.63	5,348.5	-0.1	-16.9	16.9	12.00	12.00	0.00
5,375.0	18.30	269.63	5,372.4	-0.2	-24.1	24.1	12.00	12.00	0.00
5,400.0	21.30	269.63	5,395.9	-0.2	-32.6	32.6	12.00	12.00	0.00
5,425.0	24.29	269.63	5,419.0	-0.3	-42.3	42.3	12.00	12.00	0.00
5,450.0	27.29	269.63	5,441.5	-0.3	-53.2	53.2	12.00	12.00	0.00
5,475.0	30.29	269.63	5,463.4	-0.4	-65.2	65.2	12.00	12.00	0.00
5,500.0	33.29	269.63	5,484.6	-0.5	-78.4	78.4	12.00	12.00	0.00
5,525.0	36.29	269.63	5,505.2	-0.6	-92.6	92.6	12.00	12.00	0.00
5,550.0	39.29	269.63	5,524.9	-0.7	-108.0	108.0	12.00	12.00	0.00
5,575.0	42.29	269.63	5,543.9	-0.8	-124.3	124.3	12.00	12.00	0.00
5,600.0	45.29	269.63	5,561.9	-0.9	-141.6	141.6	12.00	12.00	0.00
5,625.0	48.29	269.63	5,579.0	-1.0	-159.8	159.8	12.00	12.00	0.00
5,650.0	51.29	269.63	5,595.2	-1.2	-178.9	178.9	12.00	12.00	0.00
5,675.0	54.29	269.63	5,610.3	-1.3	-198.8	198.8	12.00	12.00	0.00
5,700.0	57.29	269.63	5,624.3	-1.4	-219.5	219.5	12.00	12.00	0.00
5,725.0	60.29	269.63	5,637.3	-1.6	-240.9	240.9	12.00	12.00	0.00
5,750.0	63.29	269.63	5,649.1	-1.7	-262.9	262.9	12.00	12.00	0.00
5,775.0	66.29	269.63	5,659.7	-1.8	-285.5	285.5	12.00	12.00	0.00
5,800.0	69.28	269.63	5,669.2	-2.0	-308.6	308.6	12.00	12.00	0.00
5,825.0	72.28	269.63	5,677.4	-2.1	-332.2	332.2	12.00	12.00	0.00
5,850.0	75.28	269.63	5,684.4	-2.3	-356.2	356.2	12.00	12.00	0.00
5,875.0	78.28	269.63	5,690.1	-2.5	-380.6	380.6	12.00	12.00	0.00
5,900.0	81.28	269.63	5,694.6	-2.6	-405.2	405.2	12.00	12.00	0.00
5,925.0	84.28	269.63	5,697.7	-2.8	-430.0	430.0	12.00	12.00	0.00
5,950.0	87.28	269.63	5,699.5	-2.9	-454.9	454.9	12.00	12.00	0.00
5,975.0	90.28	269.63	5,700.1	-3.1	-479.9	479.9	12.00	12.00	0.00
5,981.0	91.00	269.63	5,700.0	-3.1	-485.9	485.9	12.00	12.00	0.00
EOC - 5981.0' MD, 5700.0' TVD, 91.00° INC, 269.63° AZI, 485.9° VS									
6,000.0	91.00	269.63	5,699.7	-3.3	-504.9	504.9	0.00	0.00	0.00
6,100.0	91.00	269.63	5,697.9	-3.9	-604.9	604.9	0.00	0.00	0.00
6,200.0	91.00	269.63	5,696.2	-4.6	-704.9	704.9	0.00	0.00	0.00
6,300.0	91.00	269.63	5,694.4	-5.2	-804.8	804.8	0.00	0.00	0.00
6,400.0	91.00	269.63	5,692.7	-5.8	-904.8	904.8	0.00	0.00	0.00
6,500.0	91.00	269.63	5,690.9	-6.5	-1,004.8	1,004.8	0.00	0.00	0.00
6,600.0	91.00	269.63	5,689.2	-7.1	-1,104.8	1,104.8	0.00	0.00	0.00
6,700.0	91.00	269.63	5,687.5	-7.8	-1,204.8	1,204.8	0.00	0.00	0.00
6,800.0	91.00	269.63	5,685.7	-8.4	-1,304.8	1,304.8	0.00	0.00	0.00
6,900.0	91.00	269.63	5,684.0	-9.1	-1,404.7	1,404.8	0.00	0.00	0.00
7,000.0	91.00	269.63	5,682.2	-9.7	-1,504.7	1,504.7	0.00	0.00	0.00
7,100.0	91.00	269.63	5,680.5	-10.4	-1,604.7	1,604.7	0.00	0.00	0.00
7,200.0	91.00	269.63	5,678.7	-11.0	-1,704.7	1,704.7	0.00	0.00	0.00
7,300.0	91.00	269.63	5,677.0	-11.7	-1,804.7	1,804.7	0.00	0.00	0.00
7,400.0	91.00	269.63	5,675.2	-12.3	-1,904.6	1,904.7	0.00	0.00	0.00
7,500.0	91.00	269.63	5,673.5	-12.9	-2,004.6	2,004.7	0.00	0.00	0.00
7,600.0	91.00	269.63	5,671.7	-13.6	-2,104.6	2,104.7	0.00	0.00	0.00
7,700.0	91.00	269.63	5,670.0	-14.2	-2,204.6	2,204.6	0.00	0.00	0.00
7,800.0	91.00	269.63	5,668.3	-14.9	-2,304.6	2,304.6	0.00	0.00	0.00



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Survey Calculation Method: Minimum Curvature

Planned 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)
7,900.0	91.00	269.63	5,666.5	-15.5	-2,404.6	2,404.6	0.00	0.00	0.00
8,000.0	91.00	269.63	5,664.8	-16.2	-2,504.5	2,504.6	0.00	0.00	0.00
8,100.0	91.00	269.63	5,663.0	-16.8	-2,604.5	2,604.6	0.00	0.00	0.00
8,200.0	91.00	269.63	5,661.3	-17.5	-2,704.5	2,704.6	0.00	0.00	0.00
8,300.0	91.00	269.63	5,659.5	-18.1	-2,804.5	2,804.5	0.00	0.00	0.00
8,400.0	91.00	269.63	5,657.8	-18.8	-2,904.5	2,904.5	0.00	0.00	0.00
8,500.0	91.00	269.63	5,656.0	-19.4	-3,004.5	3,004.5	0.00	0.00	0.00
8,600.0	91.00	269.63	5,654.3	-20.0	-3,104.4	3,104.5	0.00	0.00	0.00
8,700.0	91.00	269.63	5,652.5	-20.7	-3,204.4	3,204.5	0.00	0.00	0.00
8,797.5	91.00	269.63	5,650.8	-21.3	-3,301.9	3,302.0	0.00	0.00	0.00

TD @ 8797.5' MD, 5650.8' TVD

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL-UL (B#16H)	0.00	0.00	5,650.8	-21.1	-3,301.9	669,224.80	638,716.20	32° 50' 20.291 N	103° 52' 54.103 W
- plan misses target center by 0.2usft at 8797.5usft MD (5650.8 TVD, -21.3 N, -3301.9 E)									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
5,222.5	5,222.5	0.0	0.0	KOP - 5222.5' MD, 5222.5' TVD, 0.00° INC, 0.00° AZI, 0.0' VS
5,981.0	5,700.0	-3.1	-485.9	EOC - 5981.0' MD, 5700.0' TVD, 91.00° INC, 269.63° AZI, 485.9' VS
8,797.5	5,650.8	-21.3	-3,301.9	TD @ 8797.5' MD, 5650.8' TVD

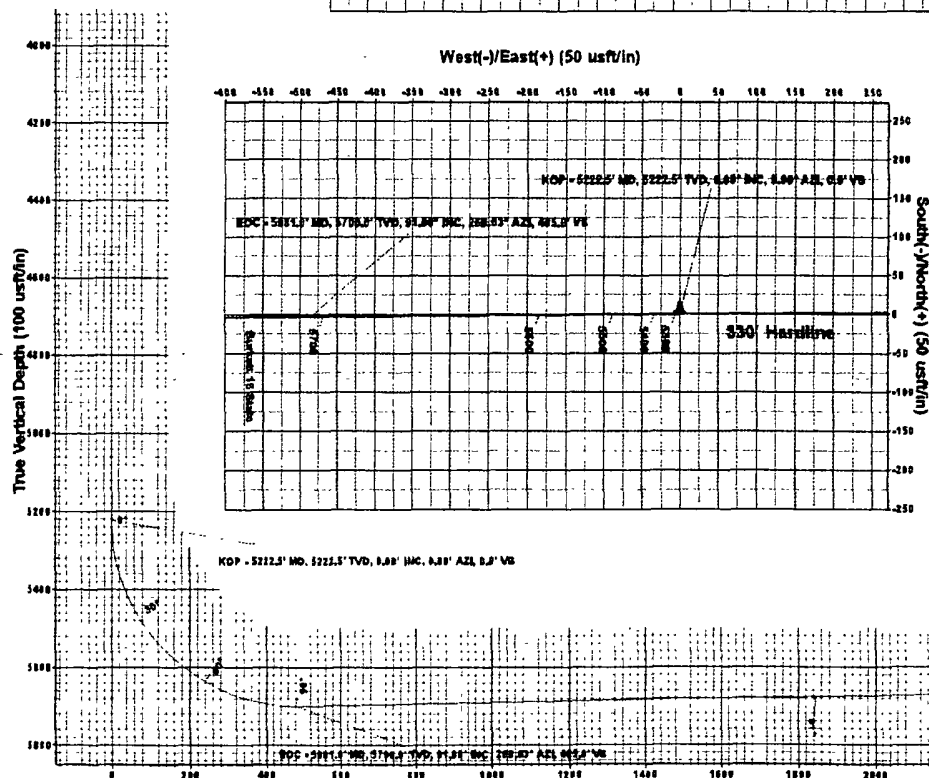


COG Operating LLC
Project: Eddy County, NM
Site: Burkett 16 State
Well: #16H
Wellbore: Upper Lateral
Plan: UL Plan #1 (#16H/Upper Lateral)



Azimuths to Grid North
True North: -0.25°
Magnetic North: 7.35°

Magnetic Field
Strength: 48823.8nT
Dip Angle: 60.87°
Date: 9/19/2012
Model: KGRF2010



West(-)/East(+) (50 usft/in)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dog	TFace	V-Sect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	5222.5	0.00	0.00	5222.5	0.0	0.0	0.00	0.00	0.0	
3	5881.0	81.00	269.63	5700.0	-3.1	-485.9	12.00	269.63	485.9	
4	8797.5	91.00	269.63	5650.8	-21.3	-3301.9	0.00	0.00	3302.0	PBHL-UL (B#16H)

WELL DETAILS: #16H

Ground Elevation: 3849.0
RKB Elevation: Well @ 3863.0usft (UDI #40 - 14' KB)
Rig Name: UDI #40 - 14' KB

Surface Hole Location -

North	East	Latitude	Longitude
669245.80	642018.10	32° 50' 20.358 N	103° 52' 15.402 W

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	North	East
PBHL-UL (B#16H)	5650.8	-21.1	-3301.9	669224.80	638716.20

PROJECT DETAILS: Eddy County, NM
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
Local North: Grid



Crescent Directional Drilling
7715 West Industrial Ave. Midland, Tx 79706
Phone: 432-618-1135

Plan: UL Plan #1 (#16H/Upper Lateral)
Created By: Matt Higgins Date: 15-08, October 08 2012



COG Operating LLC

Eddy County, NM

Burkett 16 State

#16H

Lower Lateral

Plan: LL Plan #1

Standard Planning Report

09 October, 2012

Surface: 990' FNL, 1650' FEL, Sec 16, T17S, R31E, Unit B
BHL: 990' FNL, 330' FWL, Sec 16, T17S, R31E, Unit D





Planning Report



Database: Houston R5000 Database
Company: COG Operating LLC
Project: Eddy County, NM
Site: Burkett 16 State
Well: #16H
Wellbore: Lower Lateral
Design: LL Plan #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well #16H
Well @ 3863 0usft (UDI #40 - 14' KB)
Well @ 3863 0usft (UDI #40 - 14' KB)
Grid
Minimum Curvature

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	Burkett 16 State		
Site Position:		Northing:	669,419.27 usft
From:	Map	Easting:	641,980.82 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 50' 22.075 N
		Longitude:	103° 52' 15.830 W
		Grid Convergence:	0.25°

Well	#16H, Dual Lateral		
Well Position	+N-S	-173.4 usft	Northing:
	+E-W	37.3 usft	Easting:
Position Uncertainty	2.0 usft	Wellhead Elevation:	
		Latitude:	32° 50' 20.358 N
		Longitude:	103° 52' 15.402 W
		Ground Level:	3,849.0 usft

Wellbore	Lower Lateral				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	9/19/2012	7.62	60.67	48,824

Design	LL Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	269.63

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,622.5	0.00	0.00	5,622.5	0.0	0.0	0.00	0.00	0.00	0.00	
6,381.0	91.00	269.63	6,100.0	-3.1	-485.9	12.00	12.00	0.00	269.63	
9,197.5	91.00	269.63	6,050.8	-21.3	-3,301.9	0.00	0.00	0.00	0.00	PBHL-LL (B#16H)



Planning Report



Database: Houston R5000 Database
Company: COG Operating LLC
Project: Eddy County, NM
Site: Burkett 16 State
Well: #16H
Wellbore: Lower Lateral
Design: LL Plan #1

Local Co-ordinate Reference: Well #16H
TVD Reference: Well @ 3863 0usft (UDI #40 - 14' KB)
MD Reference: Well @ 3863 0usft (UDI #40 - 14' KB)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature

Planned 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 0	0 00	0 00	0 0	0 0	0 0	0 0	0 00	0 00	0 00
100 0	0 00	0 00	100 0	0 0	0 0	0 0	0 00	0 00	0 00
200 0	0 00	0 00	200 0	0 0	0 0	0 0	0 00	0 00	0 00
300 0	0 00	0 00	300 0	0 0	0 0	0 0	0 00	0 00	0 00
400 0	0 00	0 00	400 0	0 0	0 0	0 0	0 00	0 00	0 00
500 0	0 00	0 00	500 0	0 0	0 0	0 0	0 00	0 00	0 00
600 0	0 00	0 00	600 0	0 0	0 0	0 0	0 00	0 00	0 00
700 0	0 00	0 00	700 0	0 0	0 0	0 0	0 00	0 00	0 00
800 0	0 00	0 00	800 0	0 0	0 0	0 0	0 00	0 00	0 00
900 0	0 00	0 00	900 0	0 0	0 0	0 0	0 00	0 00	0 00
1,000 0	0 00	0 00	1,000 0	0 0	0 0	0 0	0 00	0 00	0 00
1,100 0	0 00	0 00	1,100 0	0 0	0 0	0 0	0 00	0 00	0 00
1,200 0	0 00	0 00	1,200 0	0 0	0 0	0 0	0 00	0 00	0 00
1,300 0	0 00	0 00	1,300 0	0 0	0 0	0 0	0 00	0 00	0 00
1,400 0	0 00	0 00	1,400 0	0 0	0 0	0 0	0 00	0 00	0 00
1,500 0	0 00	0 00	1,500 0	0 0	0 0	0 0	0 00	0 00	0 00
1,600 0	0 00	0 00	1,600 0	0 0	0 0	0 0	0 00	0 00	0 00
1,700 0	0 00	0 00	1,700 0	0 0	0 0	0 0	0 00	0 00	0 00
1,800 0	0 00	0 00	1,800 0	0 0	0 0	0 0	0 00	0 00	0 00
1,900 0	0 00	0 00	1,900 0	0 0	0 0	0 0	0 00	0 00	0 00
2,000 0	0 00	0 00	2,000 0	0 0	0 0	0 0	0 00	0 00	0 00
2,100 0	0 00	0 00	2,100 0	0 0	0 0	0 0	0 00	0 00	0 00
2,200 0	0 00	0 00	2,200 0	0 0	0 0	0 0	0 00	0 00	0 00
2,300 0	0 00	0 00	2,300 0	0 0	0 0	0 0	0 00	0 00	0 00
2,400 0	0 00	0 00	2,400 0	0 0	0 0	0 0	0 00	0 00	0 00
2,500 0	0 00	0 00	2,500 0	0 0	0 0	0 0	0 00	0 00	0 00
2,600 0	0 00	0 00	2,600 0	0 0	0 0	0 0	0 00	0 00	0 00
2,700 0	0 00	0 00	2,700 0	0 0	0 0	0 0	0 00	0 00	0 00
2,800 0	0 00	0 00	2,800 0	0 0	0 0	0 0	0 00	0 00	0 00
2,900 0	0 00	0 00	2,900 0	0 0	0 0	0 0	0 00	0 00	0 00
3,000 0	0 00	0 00	3,000 0	0 0	0 0	0 0	0 00	0 00	0 00
3,100 0	0 00	0 00	3,100 0	0 0	0 0	0 0	0 00	0 00	0 00
3,200 0	0 00	0 00	3,200 0	0 0	0 0	0 0	0 00	0 00	0 00
3,300 0	0 00	0 00	3,300 0	0 0	0 0	0 0	0 00	0 00	0 00
3,400 0	0 00	0 00	3,400 0	0 0	0 0	0 0	0 00	0 00	0 00
3,500 0	0 00	0 00	3,500 0	0 0	0 0	0 0	0 00	0 00	0 00
3,600 0	0 00	0 00	3,600 0	0 0	0 0	0 0	0 00	0 00	0 00
3,700 0	0 00	0 00	3,700 0	0 0	0 0	0 0	0 00	0 00	0 00
3,800 0	0 00	0 00	3,800 0	0 0	0 0	0 0	0 00	0 00	0 00
3,900 0	0 00	0 00	3,900 0	0 0	0 0	0 0	0 00	0 00	0 00
4,000 0	0 00	0 00	4,000 0	0 0	0 0	0 0	0 00	0 00	0 00
4,100 0	0 00	0 00	4,100 0	0 0	0 0	0 0	0 00	0 00	0 00
4,200 0	0 00	0 00	4,200 0	0 0	0 0	0 0	0 00	0 00	0 00
4,300 0	0 00	0 00	4,300 0	0 0	0 0	0 0	0 00	0 00	0 00
4,400 0	0 00	0 00	4,400 0	0 0	0 0	0 0	0 00	0 00	0 00
4,500 0	0 00	0 00	4,500 0	0 0	0 0	0 0	0 00	0 00	0 00
4,600 0	0 00	0 00	4,600 0	0 0	0 0	0 0	0 00	0 00	0 00
4,700 0	0 00	0 00	4,700 0	0 0	0 0	0 0	0 00	0 00	0 00
4,800 0	0 00	0 00	4,800 0	0 0	0 0	0 0	0 00	0 00	0 00
4,900 0	0 00	0 00	4,900 0	0 0	0 0	0 0	0 00	0 00	0 00
5,000 0	0 00	0 00	5,000 0	0 0	0 0	0 0	0 00	0 00	0 00
5,100 0	0 00	0 00	5,100 0	0 0	0 0	0 0	0 00	0 00	0 00
5,200 0	0 00	0 00	5,200 0	0 0	0 0	0 0	0 00	0 00	0 00
5,300 0	0 00	0 00	5,300 0	0 0	0 0	0 0	0 00	0 00	0 00



Planning Report



Database: Houston R5000 Database
 Company: COG Operating LLC
 Project: Eddy County, NM
 Site: Burkett 16 State
 Well: #16H
 Wellbore: Lower Lateral
 Design: LL Plan #1

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Well #16H
 Well @ 3863 0usft (UDI #40 - 14' KB)
 Well @ 3863 0usft (UDI #40 - 14' KB)
 Grid
 Minimum Curvature

Planned 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)
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,622.5	0.00	0.00	5,622.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 5622.5' MD, 5622.5' TVD, 0.00° INC, 0.00° AZI, 0.0° VS									
5,625.0	0.30	269.63	5,625.0	0.0	0.0	0.0	12.00	12.00	0.00
5,650.0	3.30	269.63	5,650.0	0.0	-0.8	0.8	12.00	12.00	0.00
5,675.0	6.30	269.63	5,674.9	0.0	-2.9	2.9	12.00	12.00	0.00
5,700.0	9.30	269.63	5,699.7	0.0	-6.3	6.3	12.00	12.00	0.00
5,725.0	12.30	269.63	5,724.2	-0.1	-11.0	11.0	12.00	12.00	0.00
5,750.0	15.30	269.63	5,748.5	-0.1	-16.9	16.9	12.00	12.00	0.00
5,775.0	18.30	269.63	5,772.4	-0.2	-24.1	24.1	12.00	12.00	0.00
5,800.0	21.30	269.63	5,795.9	-0.2	-32.6	32.6	12.00	12.00	0.00
5,825.0	24.29	269.63	5,819.0	-0.3	-42.3	42.3	12.00	12.00	0.00
5,850.0	27.29	269.63	5,841.5	-0.3	-53.2	53.2	12.00	12.00	0.00
5,875.0	30.29	269.63	5,863.4	-0.4	-65.2	65.2	12.00	12.00	0.00
5,900.0	33.29	269.63	5,884.6	-0.5	-78.4	78.4	12.00	12.00	0.00
5,925.0	36.29	269.63	5,905.2	-0.6	-92.6	92.6	12.00	12.00	0.00
5,950.0	39.29	269.63	5,924.9	-0.7	-108.0	108.0	12.00	12.00	0.00
5,975.0	42.29	269.63	5,943.9	-0.8	-124.3	124.3	12.00	12.00	0.00
6,000.0	45.29	269.63	5,961.9	-0.9	-141.6	141.6	12.00	12.00	0.00
6,025.0	48.29	269.63	5,979.0	-1.0	-159.8	159.8	12.00	12.00	0.00
6,050.0	51.29	269.63	5,995.2	-1.2	-178.9	178.9	12.00	12.00	0.00
6,075.0	54.29	269.63	6,010.3	-1.3	-198.8	198.8	12.00	12.00	0.00
6,100.0	57.29	269.63	6,024.3	-1.4	-219.5	219.5	12.00	12.00	0.00
6,125.0	60.29	269.63	6,037.3	-1.6	-240.9	240.9	12.00	12.00	0.00
6,150.0	63.29	269.63	6,049.1	-1.7	-262.9	262.9	12.00	12.00	0.00
6,175.0	66.29	269.63	6,059.7	-1.8	-285.5	285.5	12.00	12.00	0.00
6,200.0	69.28	269.63	6,069.2	-2.0	-308.6	308.6	12.00	12.00	0.00
6,225.0	72.28	269.63	6,077.4	-2.1	-332.2	332.2	12.00	12.00	0.00
6,250.0	75.28	269.63	6,084.4	-2.3	-356.2	356.2	12.00	12.00	0.00
6,275.0	78.28	269.63	6,090.1	-2.5	-380.6	380.6	12.00	12.00	0.00
6,300.0	81.28	269.63	6,094.6	-2.6	-405.2	405.2	12.00	12.00	0.00
6,325.0	84.28	269.63	6,097.7	-2.8	-430.0	430.0	12.00	12.00	0.00
6,350.0	87.28	269.63	6,099.5	-2.9	-454.9	454.9	12.00	12.00	0.00
6,375.0	90.28	269.63	6,100.1	-3.1	-479.9	479.9	12.00	12.00	0.00
6,381.0	91.00	269.63	6,100.0	-3.1	-485.9	485.9	12.00	12.00	0.00
EOC - 6381.0' MD, 6100.0' TVD, 91.00° INC, 269.63° AZI, 485.9° VS									
6,400.0	91.00	269.63	6,099.7	-3.3	-504.9	504.9	0.00	0.00	0.00
6,500.0	91.00	269.63	6,097.9	-3.9	-604.9	604.9	0.00	0.00	0.00
6,600.0	91.00	269.63	6,096.2	-4.6	-704.9	704.9	0.00	0.00	0.00
6,700.0	91.00	269.63	6,094.4	-5.2	-804.8	804.8	0.00	0.00	0.00
6,800.0	91.00	269.63	6,092.7	-5.8	-904.8	904.8	0.00	0.00	0.00
6,900.0	91.00	269.63	6,090.9	-6.5	-1,004.8	1,004.8	0.00	0.00	0.00
7,000.0	91.00	269.63	6,089.2	-7.1	-1,104.8	1,104.8	0.00	0.00	0.00
7,100.0	91.00	269.63	6,087.5	-7.8	-1,204.8	1,204.8	0.00	0.00	0.00
7,200.0	91.00	269.63	6,085.7	-8.4	-1,304.8	1,304.8	0.00	0.00	0.00
7,300.0	91.00	269.63	6,084.0	-9.1	-1,404.7	1,404.8	0.00	0.00	0.00
7,400.0	91.00	269.63	6,082.2	-9.7	-1,504.7	1,504.7	0.00	0.00	0.00
7,500.0	91.00	269.63	6,080.5	-10.4	-1,604.7	1,604.7	0.00	0.00	0.00
7,600.0	91.00	269.63	6,078.7	-11.0	-1,704.7	1,704.7	0.00	0.00	0.00
7,700.0	91.00	269.63	6,077.0	-11.7	-1,804.7	1,804.7	0.00	0.00	0.00
7,800.0	91.00	269.63	6,075.2	-12.3	-1,904.6	1,904.7	0.00	0.00	0.00



Planning Report



Database: Houston R5000 Database
 Company: COG Operating LLC
 Project: Eddy County, NM
 Site: Burkett 16 State
 Well: #16H
 Wellbore: Lower Lateral
 Design: LL Plan #1

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Well #16H
 Well @ 3863 0usft (UDI #40 - 14' KB)
 Well @ 3863 0usft (UDI #40 - 14' KB)
 Grd
 Minimum Curvature

Planned 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)
7,900.0	91.00	269.63	6,073.5	-12.9	-2,004.6	2,004.7	0.00	0.00	0.00
8,000.0	91.00	269.63	6,071.7	-13.6	-2,104.6	2,104.7	0.00	0.00	0.00
8,100.0	91.00	269.63	6,070.0	-14.2	-2,204.6	2,204.6	0.00	0.00	0.00
8,200.0	91.00	269.63	6,068.3	-14.9	-2,304.6	2,304.6	0.00	0.00	0.00
8,300.0	91.00	269.63	6,066.5	-15.5	-2,404.6	2,404.6	0.00	0.00	0.00
8,400.0	91.00	269.63	6,064.8	-16.2	-2,504.5	2,504.6	0.00	0.00	0.00
8,500.0	91.00	269.63	6,063.0	-16.8	-2,604.5	2,604.6	0.00	0.00	0.00
8,600.0	91.00	269.63	6,061.3	-17.5	-2,704.5	2,704.6	0.00	0.00	0.00
8,700.0	91.00	269.63	6,059.5	-18.1	-2,804.5	2,804.5	0.00	0.00	0.00
8,800.0	91.00	269.63	6,057.8	-18.8	-2,904.5	2,904.5	0.00	0.00	0.00
8,900.0	91.00	269.63	6,056.0	-19.4	-3,004.5	3,004.5	0.00	0.00	0.00
9,000.0	91.00	269.63	6,054.3	-20.0	-3,104.4	3,104.5	0.00	0.00	0.00
9,100.0	91.00	269.63	6,052.5	-20.7	-3,204.4	3,204.5	0.00	0.00	0.00
9,197.5	91.00	269.63	6,050.8	-21.3	-3,301.9	3,302.0	0.00	0.00	0.00

TD @ 9197.5' MD, 6050.8' TVD

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N-S (usft)	+E-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL-LL (B#16H)	0.00	0.00	6,050.8	-21.1	-3,301.9	669,224.80	638,716.20	32° 50' 20.291 N	103° 52' 54.103 W
- plan misses target center by 0.2usft at 9197.5usft MD (6050.8 TVD, -21.3 N, -3301.9 E)									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N-S (usft)	+E-W (usft)	Comment
5,622.5	5,622.5	0.0	0.0	KOP - 5622.5' MD, 5622.5' TVD, 0.00° INC, 0.00° AZI, 0.0' VS
6,381.0	6,100.0	-3.1	-485.9	EOC - 6381.0' MD, 6100.0' TVD, 91.00° INC, 269.63° AZI, 485.9' VS
9,197.5	6,050.8	-21.3	-3,301.9	TD @ 9197.5' MD, 6050.8' TVD

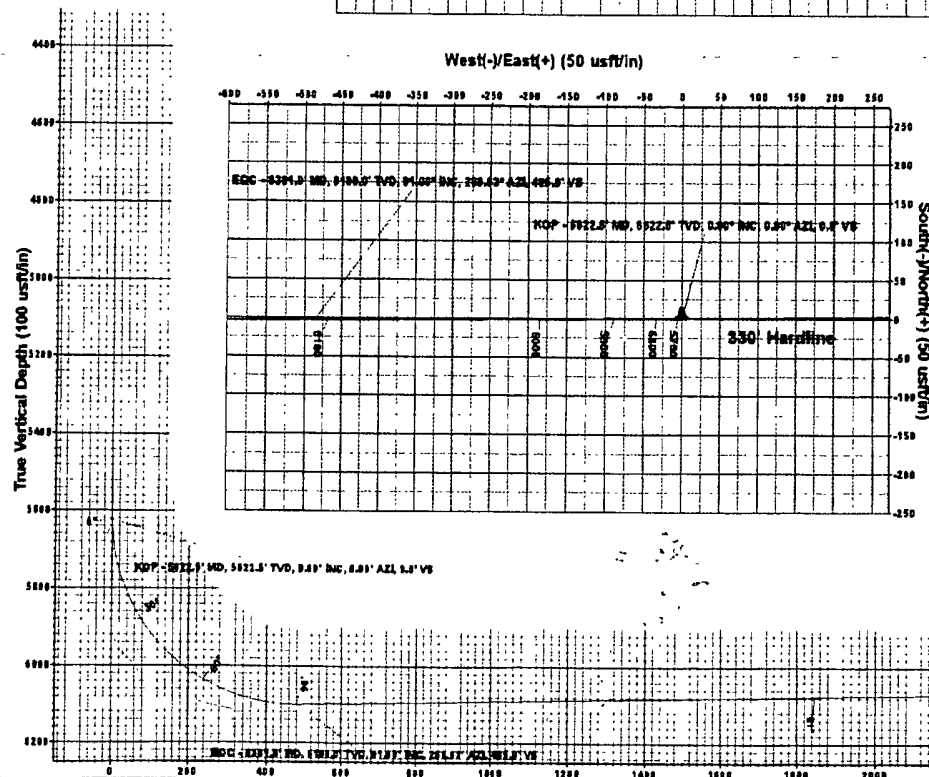
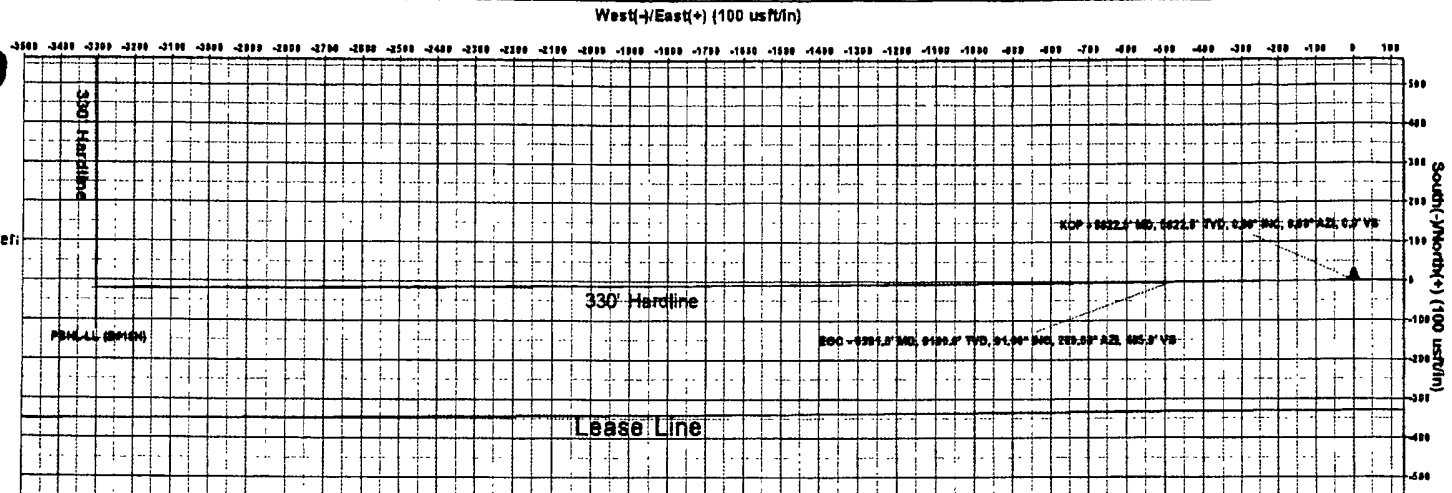


COG Operating LLC
Project: Eddy County, NM
Site: Burkett 16 State
Well: #16H
Wellbore: Lower Lateral
Plan: LL Plan #1 (#16H/Lower Lateral)



Azimuths to Grid North
True North: -0.25°
Magnetic North: 7.35°

Magnetic Field
Strength: 48623.8nT
Dip Angle: 80.67°
Date: 9/19/2012
Model: IGRF2010



Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Deg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	5622.5	0.00	0.00	5622.5	0.0	0.0	0.00	0.00	0.0	
3	6381.0	01.00	269.63	6100.0	-3.1	-485.9	12.00	269.63	485.9	
4	9197.5	01.00	269.63	8050.8	-21.3	-3301.9	0.00	0.00	3302.0	PBHL-LL (B#16H)

WELL DETAILS: #16H

Ground Elevation: 3849.0
RKB Elevation: Well @ 3863.0usft (UDI #40 - 14' KB)
Rig Name: UDI #40 - 14' KB

Surface Hole Location
Northing: 669245.90
Easting: 642018.10
Latitude: 32° 50' 20.358 N
Longitude: 103° 52' 15.402 W

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL-LL (B#16H)	6050.8	-21.1	-3301.9	669224.80	638716.20

PROJECT DETAILS: Eddy County, NM
Geodetic System: US State Plane 1027 (Exact solution)
Datum: NAD 1983 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



Vertical Section at 269.63° (100 usft/in)

Crescent Directional Drilling
7715 West Industrial Ave. Midland, Tx 79706
Phone: 432-618-1135

Plan: LL Plan #1 (#16H/Lower Lateral)
Created By: Matt Higgins Date: 15/27, October 09 2012