

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
OCD ArtesiaFORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		8. Well Name and No. MAGURA 8 FEDERAL 4H
2. Name of Operator COG OPERATING LLC		9. API Well No. 30-015-39472
3a. Address 2208 W MAIN ST ARTESIA, NM 88210		10. Field and Pool, or Exploratory WILDCAT; BONE SPRING
3b. Phone No. (include area code) Ph: 575-748-6958		11. County or Parish, and State EDDY COUNTY, NM
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 8 T26S R26E NENW 330FNL 2080FWL		

RECEIVED

NOV 21 2012

NMOCD ARTESIA

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original APD
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

COG Operating LLC respectfully requests the following changes:
Production casing section:

Drill 7-7/8? vertical to 6700?. NO PILOT HOLE.

Kick off and drill 7-7/8? curve & lateral to 11,680? MD/7220? TVD (see attached directional plan)

Run 5-1/2? 17# P-110 LTC csg to TD

Cmt in 1 stage with:

Lead: 700 sx 50:50:10 H + Salt + Gilsonte + CF + CFR-3 @ 11.8 ppg/2.5 yield

Tail: 950 sx 50:50:2 H + Salt + GasStop + CFR-3 @ 14.4 ppg/1.25 yield

Designed to circulate cement to surface

35% excess on OH

Since the Wolfcamp will not be penetrated as originally proposed, COG Operating LLC will utilize 2M

Accepted for record

NMOCD

APPROVED

NOV 20 2012

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

14. Thereby certify that the foregoing is true and correct.		Accepted for record NMOCD 11/14/2012
Electronic Submission #159931 verified by the BLM Well Information System For COG OPERATING LLC, sent to the Carlsbad Committed to AFMSS for processing by KURT SIMMONS on 11/14/2012 ()		
Name (Printed/Typed) DEBORA WILBOURN	Title DRLG ENGINEERING TECH	
Signature (Electronic Submission)	Date 11/09/2012	

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____	Title _____	Date _____
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		Office _____

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

Additional data for EC transaction #159931 that would not fit on the form

32. Additional remarks, continued

& 3M systems,

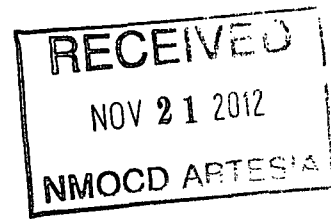
Nipple up on 13 3/8 with annular preventer tested to 50% of rating working pressure by independent tester and the rest of the 2M system tested to 2000 psi.

Nipple up on 9 5/8 with 3M system tested 3000 psi to by independent tester.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. A 2" kill line and a minimum 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

Operator will install 5M BOP as approved in APD. Will test as a 2M and 3M.

per Seth Wilde



COG Operating LLC

Eddy County, NM (NAD 83)

Magura 8 Federal

#4H

OH

Plan: Plan #1

Standard Planning Report

08 November, 2012



Database:	Houston R5000 Database	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3551.8usft (Patriot #2 - 18' KB)
Project:	Eddy County, NM (NAD 83)	MD Reference:	WELL @ 3551.8usft (Patriot #2 - 18' KB)
Site:	Magura 8 Federal	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project: Eddy County, NM (NAD 83)			
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Magura 8 Federal					
Site Position:		Northing:	386,844.24 usft	Latitude:	32° 3' 48.649 N
From:	Map	Easting:	546,380.95 usft	Longitude:	104° 19' 1.388 W
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.01

Well	#4H					
Well Position	+N/-S	0.0 usft	Northing:	386,844.24 usft	Latitude:	32° 3' 48.649 N
	+E/-W	0.0 usft	Easting:	546,380.95 usft	Longitude:	104° 19' 1.388 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	3,533.8 usft

Wellbore: OH					
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	11/8/2012	7.73	59.90	48,340

Design: 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	180.66

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	
6,742.5	0.00	0.00	6,742.5	0.0	0.0	0.00	0.00	0.00	0.00	
7,492.6	90.00	180.66	7,220.0	-477.5	-5.5	12.00	12.00	0.00	180.66	
11,680.5	90.00	180.66	7,220.0	-4,665.1	-53.7	0.00	0.00	0.00	0.00	PBHL (M8#4H)

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Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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	

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Design:	Plan #1		

Planned Survey										
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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	
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,742.5	0.00	0.00	6,742.5	0.0	0.0	0.0	0.00	0.00	0.00	
KOP - 6742.5' MD, 6742.5' TVD, 0.00° INC, 0.00° AZI, 0.0° VS										
6,750.0	0.90	180.66	6,750.0	-0.1	0.0	0.1	12.00	12.00	0.00	
6,775.0	3.90	180.66	6,775.0	-1.1	0.0	1.1	12.00	12.00	0.00	
6,800.0	6.90	180.66	6,799.9	-3.5	0.0	3.5	12.00	12.00	0.00	
6,825.0	9.90	180.66	6,824.6	-7.1	-0.1	7.1	12.00	12.00	0.00	
6,850.0	12.90	180.66	6,849.1	-12.0	-0.1	12.0	12.00	12.00	0.00	
6,875.0	15.90	180.66	6,873.3	-18.3	-0.2	18.3	12.00	12.00	0.00	
6,900.0	18.90	180.66	6,897.2	-25.7	-0.3	25.7	12.00	12.00	0.00	
6,925.0	21.90	180.66	6,920.6	-34.5	-0.4	34.5	12.00	12.00	0.00	
6,950.0	24.90	180.66	6,943.5	-44.4	-0.5	44.4	12.00	12.00	0.00	
6,975.0	27.90	180.66	6,965.9	-55.5	-0.6	55.5	12.00	12.00	0.00	
7,000.0	30.90	180.66	6,987.7	-67.8	-0.8	67.8	12.00	12.00	0.00	
7,025.0	33.90	180.66	7,008.8	-81.2	-0.9	81.2	12.00	12.00	0.00	
7,050.0	36.90	180.66	7,029.2	-95.6	-1.1	95.6	12.00	12.00	0.00	
7,075.0	39.90	180.66	7,048.8	-111.2	-1.3	111.2	12.00	12.00	0.00	
7,100.0	42.90	180.66	7,067.5	-127.7	-1.5	127.7	12.00	12.00	0.00	
7,125.0	45.90	180.66	7,085.4	-145.2	-1.7	145.2	12.00	12.00	0.00	
7,150.0	48.90	180.66	7,102.3	-163.6	-1.9	163.6	12.00	12.00	0.00	
7,175.0	51.90	180.66	7,118.2	-182.8	-2.1	182.8	12.00	12.00	0.00	
7,200.0	54.90	180.66	7,133.1	-202.9	-2.3	202.9	12.00	12.00	0.00	
7,225.0	57.90	180.66	7,147.0	-223.7	-2.6	223.7	12.00	12.00	0.00	
7,250.0	60.90	180.66	7,159.7	-245.2	-2.8	245.2	12.00	12.00	0.00	
7,275.0	63.90	180.66	7,171.3	-267.4	-3.1	267.4	12.00	12.00	0.00	
7,300.0	66.90	180.66	7,181.7	-290.1	-3.3	290.1	12.00	12.00	0.00	
7,325.0	69.89	180.66	7,190.9	-313.3	-3.6	313.4	12.00	12.00	0.00	
7,350.0	72.89	180.66	7,198.9	-337.0	-3.9	337.1	12.00	12.00	0.00	
7,375.0	75.89	180.66	7,205.6	-361.1	-4.2	361.1	12.00	12.00	0.00	
7,400.0	78.89	180.66	7,211.1	-385.5	-4.4	385.5	12.00	12.00	0.00	
7,425.0	81.89	180.66	7,215.2	-410.1	-4.7	410.2	12.00	12.00	0.00	
7,450.0	84.89	180.66	7,218.1	-435.0	-5.0	435.0	12.00	12.00	0.00	
7,475.0	87.89	180.66	7,219.7	-459.9	-5.3	459.9	12.00	12.00	0.00	
7,492.6	90.00	180.66	7,220.0	-477.5	-5.5	477.5	11.97	11.97	0.00	
EOC - 7492.6' MD, 7220.0' TVD, 90.00° INC, 180.66° AZI, 477.5° VS										
7,500.0	90.00	180.66	7,220.0	-484.9	-5.6	484.9	0.00	0.00	0.00	
7,600.0	90.00	180.66	7,220.0	-584.9	-6.7	584.9	0.00	0.00	0.00	
7,700.0	90.00	180.66	7,220.0	-684.9	-7.9	684.9	0.00	0.00	0.00	
7,800.0	90.00	180.66	7,220.0	-784.9	-9.0	784.9	0.00	0.00	0.00	
7,900.0	90.00	180.66	7,220.0	-884.9	-10.2	884.9	0.00	0.00	0.00	

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Design:	Plan #1		

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)	
8,000.0	90.00	180.66	7,220.0	-984.9	-11.3	984.9	0.00	0.00	0.00	
8,100.0	90.00	180.66	7,220.0	-1,084.9	-12.5	1,084.9	0.00	0.00	0.00	
8,200.0	90.00	180.66	7,220.0	-1,184.9	-13.6	1,184.9	0.00	0.00	0.00	
8,300.0	90.00	180.66	7,220.0	-1,284.9	-14.8	1,284.9	0.00	0.00	0.00	
8,400.0	90.00	180.66	7,220.0	-1,384.9	-16.0	1,384.9	0.00	0.00	0.00	
8,500.0	90.00	180.66	7,220.0	-1,484.8	-17.1	1,484.9	0.00	0.00	0.00	
8,600.0	90.00	180.66	7,220.0	-1,584.8	-18.3	1,584.9	0.00	0.00	0.00	
8,700.0	90.00	180.66	7,220.0	-1,684.8	-19.4	1,684.9	0.00	0.00	0.00	
8,800.0	90.00	180.66	7,220.0	-1,784.8	-20.6	1,784.9	0.00	0.00	0.00	
8,900.0	90.00	180.66	7,220.0	-1,884.8	-21.7	1,884.9	0.00	0.00	0.00	
9,000.0	90.00	180.66	7,220.0	-1,984.8	-22.9	1,984.9	0.00	0.00	0.00	
9,100.0	90.00	180.66	7,220.0	-2,084.8	-24.0	2,084.9	0.00	0.00	0.00	
9,200.0	90.00	180.66	7,220.0	-2,184.8	-25.2	2,184.9	0.00	0.00	0.00	
9,300.0	90.00	180.66	7,220.0	-2,284.8	-26.3	2,284.9	0.00	0.00	0.00	
9,400.0	90.00	180.66	7,220.0	-2,384.8	-27.5	2,384.9	0.00	0.00	0.00	
9,500.0	90.00	180.66	7,220.0	-2,484.8	-28.6	2,484.9	0.00	0.00	0.00	
9,600.0	90.00	180.66	7,220.0	-2,584.8	-29.8	2,584.9	0.00	0.00	0.00	
9,700.0	90.00	180.66	7,220.0	-2,684.8	-30.9	2,684.9	0.00	0.00	0.00	
9,800.0	90.00	180.66	7,220.0	-2,784.8	-32.1	2,784.9	0.00	0.00	0.00	
9,900.0	90.00	180.66	7,220.0	-2,884.8	-33.2	2,884.9	0.00	0.00	0.00	
10,000.0	90.00	180.66	7,220.0	-2,984.7	-34.4	2,984.9	0.00	0.00	0.00	
10,100.0	90.00	180.66	7,220.0	-3,084.7	-35.5	3,084.9	0.00	0.00	0.00	
10,200.0	90.00	180.66	7,220.0	-3,184.7	-36.7	3,184.9	0.00	0.00	0.00	
10,300.0	90.00	180.66	7,220.0	-3,284.7	-37.8	3,284.9	0.00	0.00	0.00	
10,400.0	90.00	180.66	7,220.0	-3,384.7	-39.0	3,384.9	0.00	0.00	0.00	
10,500.0	90.00	180.66	7,220.0	-3,484.7	-40.1	3,484.9	0.00	0.00	0.00	
10,600.0	90.00	180.66	7,220.0	-3,584.7	-41.3	3,584.9	0.00	0.00	0.00	
10,700.0	90.00	180.66	7,220.0	-3,684.7	-42.4	3,684.9	0.00	0.00	0.00	
10,800.0	90.00	180.66	7,220.0	-3,784.7	-43.6	3,784.9	0.00	0.00	0.00	
10,900.0	90.00	180.66	7,220.0	-3,884.7	-44.8	3,884.9	0.00	0.00	0.00	
11,000.0	90.00	180.66	7,220.0	-3,984.7	-45.9	3,984.9	0.00	0.00	0.00	
11,100.0	90.00	180.66	7,220.0	-4,084.7	-47.1	4,084.9	0.00	0.00	0.00	
11,200.0	90.00	180.66	7,220.0	-4,184.7	-48.2	4,184.9	0.00	0.00	0.00	
11,300.0	90.00	180.66	7,220.0	-4,284.7	-49.4	4,284.9	0.00	0.00	0.00	
11,400.0	90.00	180.66	7,220.0	-4,384.7	-50.5	4,384.9	0.00	0.00	0.00	
11,500.0	90.00	180.66	7,220.0	-4,484.6	-51.7	4,484.9	0.00	0.00	0.00	
11,600.0	90.00	180.66	7,220.0	-4,584.6	-52.8	4,584.9	0.00	0.00	0.00	
11,680.5	90.00	180.66	7,220.0	-4,665.1	-53.7	4,665.4	0.00	0.00	0.00	
TD @ 11680.5' MD, 7220.0' TVD										

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude
hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
Shape									
PBHL (M8#4H)	0.00	0.00	7,220.0	-4,665.1	-53.9	382,179.11	546,327.00	32° 3' 2.481 N	104° 19' 2.023 W
- plan misses target center by 0.2usft at 11680.5usft MD (7220.0 TVD, -4665.1 N, -53.7 E)									
- Point									

Database:	Houston R5000 Database	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3551.8usft (Patriot #2 - 18' KB)
Project:	Eddy County, NM (NAD 83)	MD Reference:	WELL @ 3551.8usft (Patriot #2 - 18' KB)
Site:	Magura 8 Federal	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,742.5	6,742.5	0.0	0.0	KOP - 6742.5' MD, 6742.5' TVD, 0.00° INC, 0.00° AZI, 0.0' VS
7,492.6	7,220.0	-477.5	-5.5	EOC - 7492.6' MD, 7220.0' TVD, 90.00° INC, 180.66° AZI, 477.5' VS
11,680.5	7,220.0	-4,665.1	-53.7	TD @ 11680.5' MD, 7220.0' TVD



WELL DETAILS: #4H

COG Operating LLC
Project: Eddy County, NM (NAD 83)
Site: Magura 8 Federal
Well: #4H
Wellbore: OH
Plan: Plan #1 (#4H/OH)

Ground Elevation:: 3533.8
RKB Elevation: WELL @ 3551.8usft (Patriot #2 - 18' KB)
Rig Name: Patriot #2 - 18' KB

Surface Hole Location
Northing Easting Latitude Longitude
386844.24 546380.95 32° 3' 48.649 N 104° 19' 1.388 W



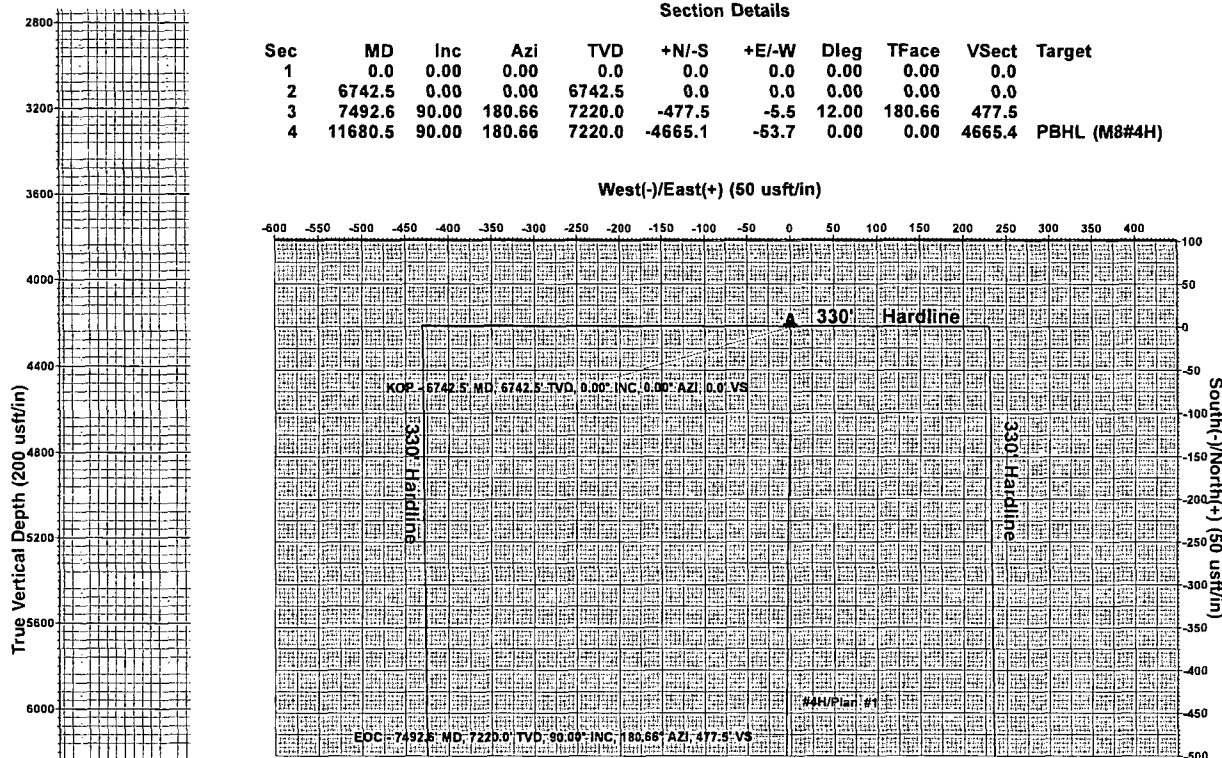
Azimuths to Grid North
True North: -0.01°
Magnetic North: 7.72°

Magnetic Field
Strength: 48340.0nT
Dip Angle: 59.90°
Date: 11/8/2012
Model: IGRF200510

Section Details

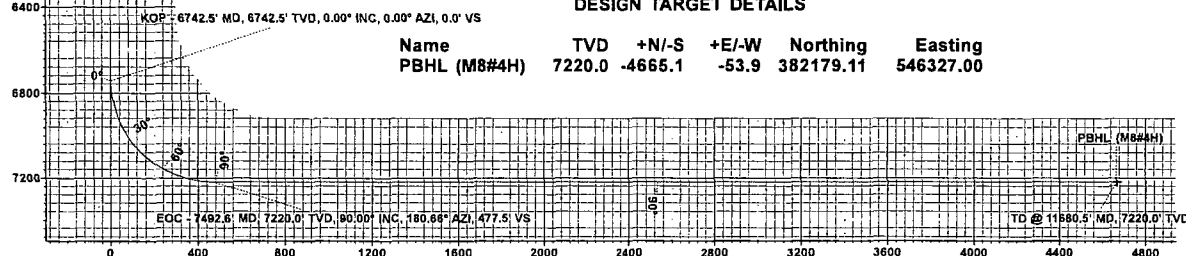
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	6742.5	0.00	0.00	6742.5	0.0	0.0	0.00	0.00	0.0	
3	7492.6	90.00	180.66	7220.0	-477.5	-5.5	12.00	180.66	477.5	
4	11680.5	90.00	180.66	7220.0	-4665.1	-53.7	0.00	0.00	4665.4	PBHL (M8#4H)

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



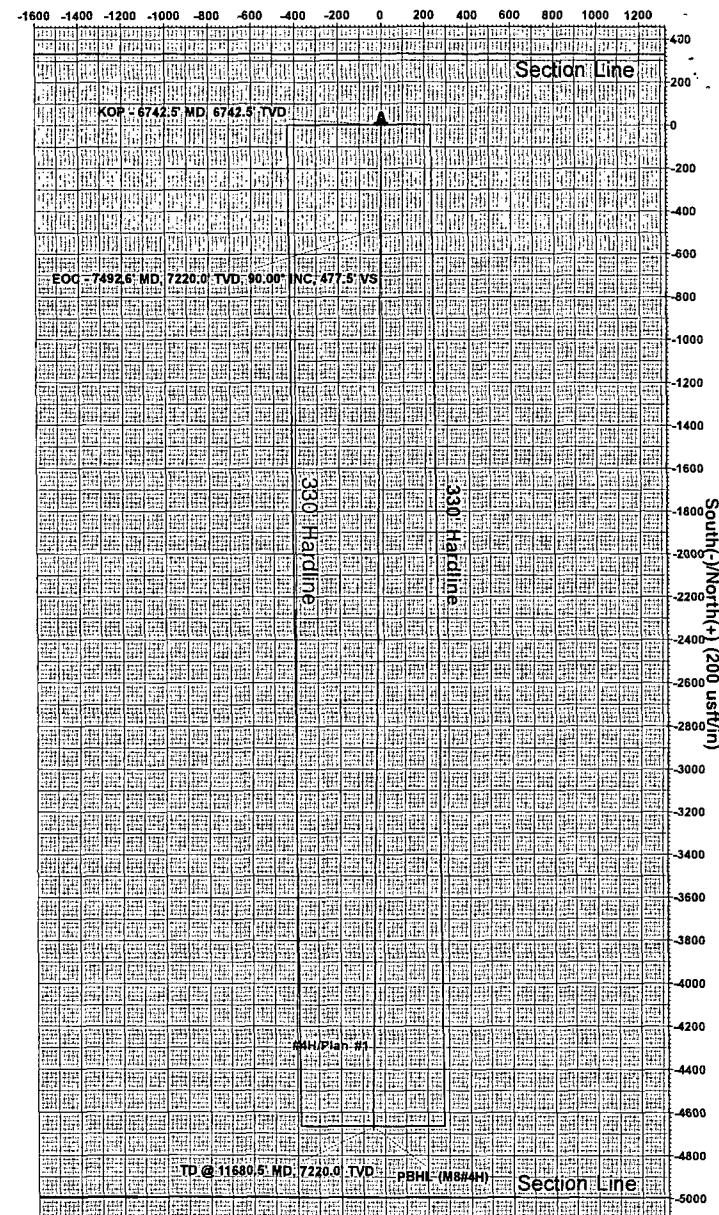
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL (M8#4H)	7220.0	-4665.1	-53.9	382179.11	546327.00



Vertical Section at 180.66° (200 usft/in)

West(-)/East(+) (200 usft/in)



PROJECT DETAILS: Eddy County, NM (NAD 83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid



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

Plan: Plan #1 (#4H/OH)
Created By: Matt Higgins Date: 18:06, November 08 2012