HOBBS OCD

ATS-14-343

Form 3160-3
(March 2012)

MAR 27 2014

OCD Hobbs

RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMLC-0061842

6. If Indian, Allotee or Tribe Name
N/A

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.
N/A

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No. (40481)
FLAT HEAD FEDERAL COM #6H

2. Name of Operator COG Operating LLC (229137)

9. API Well No.
30-025- 41759

3a. Address
One Concho Center, 600 W. Illinois Ave
Midland, TX 79701

3b. Phone No. *(include area code)*
432-685-4384

10. Field and Pool, or Exploratory
Maljamar; Yeso, West (44500)

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface SHL: 1115' FNL & 1650' FEL, Unit B, Sec 14

At proposed prod. zone BHL: 330' FNL & 1650' FEL, Unit B, Sec 11

11. Sec., T. R. M. or Blk. and Survey or Area
Sec 11 & 14 T17S R32E

14. Distance in miles and direction from nearest town or post office*
2 miles from Loco Hills, NM

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
1115'	320	200

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on file
517'	TVD: 5803' MD: 11745'	NMB000740; NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
4092' GL	3/31/2014	15 Days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
	Kelly J. Holly	12/17/2013

Title
Permitting Tech

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/S/ STEPHEN J. CAFFEY		MAR 13 2014
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval 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.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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.

(Continued on page 2)

RECEIVED
MAR 19 2014
NMOCD ARTESIA

*(Instructions on page 2)

Roswell Controlled Water Basin

KZ 03/28/14

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

APR 01 2014

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
FLAT HEAD FEDERAL COM #6H
SHL: 1115' FNL & 1650' FEL, UNIT B
Sec 14 T17S R32E
BHL: 330' FNL & 1650' FEL, Unit B
Sec 11, T17S, R29E
Eddy County, NM

1. Proration Unit Spacing: 200 Acres

2. Ground Elevation: 4092'

3. Proposed Depths: Horizontal: **EOC (end of curve) TVD=5900' MD= 6206'**
Toe (end of lateral) TVD=5803' MD= 11745

4. Estimated tops of geological markers:

Fresh Water	132'
Rustler	1015'
Top of Salt	1095'
Tansill	2230'
Yates	2340'
Queen	3300'
Grayburg	3770'
San Andres	4070'
Glorieta	5530'
Paddock	5630'
Blinebry	6105'
Tubb	6985'

Possible mineral bearing formations:

Yates	2340'	Oil/Gas
Queen	3300'	Oil/Gas
Grayburg	3770'	Oil/Gas
San Andres	4070'	Oil/Gas
Glorieta	5530'	Oil/Gas
Paddock	5630'	Oil/Gas
Blinebry	6105'	Oil/Gas
Tubb	6985'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to ~~1040'~~ 1125' (25' into Rustler) and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 9 5/8" casing to ~~2250'~~ 2375' (20' into Tansill) and circulating cement back to surface in a single or multi-stage job. The multi-stage job will have DV Tool and possibly ECP at 1090' (50' below 13 3/8' csg. shoe). Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them as described in the following paragraph.

A 8 ¾" open hole will be drilled from 9 5/8" casing shoe to KOP and thru curve. At end of curve (EOC) the open hole will be reduced to 7 7/8" and drilled to TD. At TD 5 ½" production casing will be installed. This casing string will be cemented from the TD to surface in single or multi-stage jobs. The multi-stage job will consist of two stages with DV Tool and possibly ECP set at KOP. First stage will be from TD to KOP and second stage will be from KOP to surface. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or environment.

6. Proposed Mud System

The well will be drilled to TD with a combination of fresh water, brine, cut brine mud systems. The applicable depths and properties of these systems are as follows:

See COA

DEPTH (MD)	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-1040' 1125	Fresh Water	8.5	28	N.C.
1040'-2250' 2375	Brine	10	30	N.C.
2250'-5379'	Cut Brine	8.7-9.2	30	N.C.
5379'-6206'	Cut Brine mud	8.7-9.2	30	N.C.
6206'-11745'	Cut Brine mud	8.7-9.2	30	N.C.

Sufficient mud materials will be kept at the well site to maintain mud properties and meet minimum lost circulation and weight increase requirements at all times.

Visual or electronic mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume.

The mud program has been designed to minimize the volume of H_2S circulated to surface. Proper mud weights, safe drilling practices and the use of H_2S scavengers will minimize hazards when penetrating H_2S bearing zones.

6. Proposed Casing Program

See COA

Hole Size	Interval MD	OD Casing	Weight	Grade	Condition	Jt.	brst/clps/ten
17 ½"	0-1040' 1125'	13 3/8" 0-1040'	48#	H40/J55 Hybrid	New	ST&C	1.66/1.68/7.41
12 ¼"	1040'-2250' 2375	9 5/8" 0-2250'	40#	J/K55	New	LT&C	2.14/2.20/6.82
8 ¾"	2250'-6206'	5 1/2" 0'-6206'	17#	P110	New	LT&C	1.33/2.91/5.66
7 7/8"	6206'-11745'	5 ½" 6206-11745'	17#	P110	New	LT&C	1.33/2.91/5.66

7. Proposed Cement Program

13 3/8" SURFACE: (Circulate to Surface)

		Description	Yield	Density	Water Requirements
Lead: 0'-600' Excess 110%	500 sks	Class "C"+ 4% gel+ 2 % $CaCl_2$ + 0.25 pps CF	1.75 cf/sk	14.8 ppg	6.6 gal/sk.
Tail: ~~1040'~~ 1125' 600'-1~~040~~' Excess 36%	350 sks	Class C w/2% CaCl2 + 0.25 pps CF	1.32 cf/sk	14.8 ppg	6.3 gal/sk.

Combined Excess 76%

9 5/8" INTERMEDIATE:

See COA

Option #1: Single Stage (Circulate to Surface)

Lead: 0'-1500' Excess 83%	400 sks	50:50:10 C:Poz:Gel w/ 5% Salt+ 0.25% CF +5 pps LCM	2.45 cf/sk	11.8 ppg	14.4 gal/sk.
Tail: 1500'-2250' Excess 57%	300 sks	Class C w/2% $CaCl_2$	1.32 cf/sk	14.8 ppg	6.3 gal/sk.

Combined excess 75%

See COA

Option #2: Multi-stage w/ DV Tool @ +/-~~1090~~'(DV Tool 50' below 13 3/8" csg. Shoe) (Circulate to Surface)

Stage #1:

Lead: ~~1090~~'-1500' Excess 282%	200 sks	50:50:10 C:Poz:Gel w/5% Salt +5 pps LCM + 0.25 pps CF	2.45 cf/sk	11.8 ppg	14.4 gal/sk
Tail: 1500'-2250' Excess 57%	300 sks	Class "C" w/2% CaCl2	1.32 cf/sk	14.8 ppg	6.3 gal/sk.

Stage #2:

		Description	Yield	Density	Water Requirements
Lead: 0'-1090' Excess 20%	200 sks	50:50:10 C:Poz:Gel w/5% Salt+ 5 pps LCM + 0.25 pps CF	2.45 cf/sk	11.8 ppg	14.4 gal/sk.

Combined Excess Stage #1 & Stage#2: 75%

Note: Multi-stage tool to be set depending on hole conditions at approximately 1090' (50' below the surface casing shoe). Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

5 ½" PRODUCTION CASING:

Option #1: Single Stage (Cement cal to surface)

See COA

1st Lead: 0'-3000' Excess 18%	300 sks	35:65:6 C:Poz Gel w/5% salt+ 5 pps LCM+ 0.2 % SMS+ 0.3% FL-52A+ 0.125 pps CF	2.01 cf/sk	12.5 ppg	11.4 gal/sk.
2nd Lead: 3000'-5580' Excess 28%	550 sks	50:50:2 C:Poz Gel w/5% salt+ 3 pps LCM+ 0.6 % SMS+ 0.125 pps CF+1% FL-25+ 1% BA-58	1.37 cf/sk	14.0 ppg	14.4 gal/sk.
Combined Lead Excess 23%					
Tail: 5580'-11745' Excess -1%	425 sks	Class "H" SOLUCEM-H w/0.7% HR-601	2.62 cf/sk	15.0 ppg	11.2 gal/sk.

Note: Top of ASC is below Glorieta

Combined Lead & Tail Excess: 23%

Option #2:Multi-stage (2 Stages) w/DV Tool & ECP@ +/-5379'
(Cement calculated to surface)

		Description	Yield	Density	Water Requirement
Stage #1:					
Lead: 5379'-5580' Excess 170%	100 sks	50:50:2 C:Poz Gel w/5% salt+ 3 pps LCM+ 0.6 % SMS+ 0.125 pps CF+1% FL-25+ 1% BA-58	1.37 cf/sk	14.0 ppg	6.4 gal/sk
Tail: 5580'-11745' Excess -1%	425 sks	Class "H" SOLUCEM-H w/0.7% HR-601	2.62 cf/sk	15.0 ppg	11.2 gal/sk
Stage #2: DV Tool & ECP @ +/-5379'					
Lead: 0'-3000' Excess 29%	500 sks	35:65:6 C:Poz Gel w/5% salt+ 5 pps LCM+ 0.2 % SMS+ 0.3% FL-52A+ 0.125 pps CF	2.01 cf/sk	12.5 ppg	11.4 gal/sk
Tail: 3000'-5379' Excess 25%	550 sks	50:50:2 C:Poz Gel w/5% salt+ 3 pps LCM+ 0.6 % SMS+ 0.125 pps CF+1% FL-25+ 1% BA-58	1.37 cf/sk	14.0 ppg	6.4 gal/sk

Combined Excess Stage #1 & Stage #2: 15%

Note: 5 ½" casing will be run from surface thru KOP at 5379' thru curve and lateral to TD of 11745' MD. Productive intervals will be isolated by cement as described above:.

Note: Multi-stage tool to be set depending on hole conditions at approximately 5379.' Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

8. Pressure Control Equipment:

See COA

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer, and in some cases possibly a 2000 psi Hydril type annular preventer as provided for in Onshore Order #2. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and 4 1/2" drill pipe rams on the bottom. A 13-5/8" BOP will be used during the drilling of the well. A 13 5/8" permanent casing head will be installed on the 13 3/8" casing. The BOP will be nippled up on the 13 5/8" permanent casing head and tested to 250 psig/300 psig low and 2000 psig by independent tester.. After setting 9-5/8" casing, permanent "B section" well head will be installed and the BOP will then be nippled up on the permanent B . BOP and well head will be tested again by a independent tester to 250 psig./300 psig. and 2000 psig. and used continuously until total depth is reached. 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. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve, choke lines and a choke manifold with a 2000 psi WP rating all of which will also be tested to 250 psig/300 psig low and 2000 psig by independent tester also.

9. Production Hole Drilling Summary:

Drill 8¾" hole to 5379'. Kick off at +/- 5379', building curve at 11°/100' to 91° inclination, 358.00°az. at 6206'MD/5900'TVD. Turn lateral at 3°/100' to az 359.80° at 6267'MD/5899' TVD. Reduce hole size and drill 7 7/8" lateral section in a northerly direction for +/5539' lateral to TD at +/-11745' MD, 5803' TVD. Run 5-1/2" production casing. 5 ½" casing will be run surface thru kickoff point to td. 5 ½" casing will be isolated by either a single stage or multi-stage cement jobs. Cement will be calculated to surface. Minimum tie-back is 200' above 9 5/8" casing shoe..

10. Auxiliary Well Control and Monitoring Equipment

A. Kelly cock will be kept in the drill string at all times.

B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

11. Logging, Testing and Coring Program:

A. The following logs will be run in the vertical portion of the hole to KOP: SLB-PEX/HRLA,HNGS.

B. The mud logging program will consist of lagged 10' samples from KOP to TD in Horizontal hole.

C. Drill Stem test is not anticipated.

D. No conventional coring is anticipated.

E. Further testing procedures will be determined after the 5 ½" production casing has been cemented at TD based on drill shows and log evaluation.

12. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole temperature at TD is 95° Fahrenheit and estimated maximum bottom hole pressure is 2596 psi. Wells in the Maljamar area will penetrate formations that are known or could reasonably be expected to contain Hydrogen Sulfide. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area; however, a H2S drilling operations plan is included with the APD. If H_2S concentrations exceed 100 ppm the well will be shut in and a remote operated choke will be installed (see diagram #8 &#9) and COG will comply with Onshore Order #6. All BOPE testing companies used by COG have H_2S certified employees and will work on H_2S locations. No major loss circulation zones have been reported in offsetting wells.

13. Anticipated Starting Date

Drilling operations will commence approximately on approximately **March 31, *2014*** with drilling and completion operations lasting approximately ***90*** days.

GEG 12.17.13

CONCHO

COG Operating LLC

Eddy County, New Mexico (NAD 27 NME)
Flat Head Federal Com
#6H

WB1

Plan: Plan #2 12-11-13
Surface: 1115' FNL, 1650' FEL, Sec 14, T17S, R32E, Unit B
PP: 934' FNL, 1650' FEL, Sec 14, T17S, R32E, Unit B
BHL: 330' FNL, 1650' FEL, Sec 11, T17S, R32E, Unit B

Standard Planning Report

11 December, 2013

PHOENIX
TECHNOLOGY SERVICES

Database:	GCR DB	**Local Co-ordinate Reference:**	Well #6H
Company:	COG Operating LLC	**TVD Reference:**	GL @ 4092.00usft
Project:	Eddy County, New Mexico (NAD 27 NME)	**MD Reference:**	GL @ 4092.00usft
Site:	Flat Head Federal Com	**North Reference:**	Grid
Well:	#6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #2 12-11-13		

Project	Eddy County, New Mexico (NAD 27 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	Flat Head Federal Com				
Site Position:		**Northing:**	670,431.70 usft	**Latitude:**	32° 50' 30.04534 N
From:	Map	**Easting:**	683,273.22 usft	**Longitude:**	103° 44' 11.79085 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.32 °

Well	#6H					
Well Position	**+N/-S**	-1,106.79 usft	**Northing:**	669,324.90 usft	**Latitude:**	32° 50' 19.03760 N
	+E/-W	1,002.47 usft	**Easting:**	684,275.70 usft	**Longitude:**	103° 44' 0.11474 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	4,092.00 usft

Wellbore	WB1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010_14	12/11/13	7.40	60.66	48,714

Design	Plan #2 12-11-13				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	359.64	

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,379.21	0.00	0.00	5,379.21	0.00	0.00	0.00	0.00	0.00	0.00	
6,206.48	91.00	358.00	5,900.00	529.64	-18.50	11.00	11.00	0.00	358.00	
6,266.60	91.00	359.80	5,898.95	589.73	-19.65	3.00	0.00	3.00	89.99	
11,744.73	91.00	359.80	5,803.35	6,067.00	-38.40	0.00	0.00	0.00	0.00	PBHL-Flat Head #6H

Database:	GCR DB	**Local Co-ordinate Reference:**	Well #6H
Company:	COG Operating LLC	**TVD Reference:**	GL @ 4092.00usft
Project:	Eddy County, New Mexico (NAD 27 NME)	**MD Reference:**	GL @ 4092.00usft
Site:	Flat Head Federal Com	**North Reference:**	Grid
Well:	#6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #2 12-11-13		

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,379.21	0.00	0.00	5,379.21	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 11°/100' Build									
5,400.00	2.29	358.00	5,399.99	0.41	-0.01	0.41	11.00	11.00	0.00
5,500.00	13.29	358.00	5,498.92	13.93	-0.49	13.94	11.00	11.00	0.00
5,600.00	24.29	358.00	5,593.45	46.07	-1.61	46.08	11.00	11.00	0.00
5,700.00	35.29	358.00	5,680.10	95.64	-3.34	95.66	11.00	11.00	0.00
5,750.51	40.84	358.00	5,719.85	126.75	-4.43	126.78	11.00	11.00	0.00
PP-Flat Head #6H									
5,800.00	46.29	358.00	5,755.70	160.83	-5.62	160.86	11.00	11.00	0.00
5,900.00	57.29	358.00	5,817.46	239.23	-8.35	239.28	11.00	11.00	0.00
6,000.00	68.29	358.00	5,863.12	327.97	-11.45	328.04	11.00	11.00	0.00
6,100.00	79.29	358.00	5,891.00	423.79	-14.80	423.87	11.00	11.00	0.00
6,200.00	90.29	358.00	5,900.07	523.16	-18.27	523.27	11.00	11.00	0.00
6,206.48	91.00	358.00	5,900.00	529.64	-18.50	529.74	11.00	11.00	0.00
Begin 3°/100' Turn									
6,266.60	91.00	359.80	5,898.95	589.73	-19.65	589.85	3.00	0.00	3.00
Hold 91° Inc, 359.8° Azm									
6,300.00	91.00	359.80	5,898.37	623.13	-19.76	623.24	0.00	0.00	0.00
6,400.00	91.00	359.80	5,896.62	723.11	-20.10	723.22	0.00	0.00	0.00
6,500.00	91.00	359.80	5,894.88	823.10	-20.45	823.21	0.00	0.00	0.00
6,600.00	91.00	359.80	5,893.13	923.08	-20.79	923.19	0.00	0.00	0.00
6,700.00	91.00	359.80	5,891.39	1,023.06	-21.13	1,023.18	0.00	0.00	0.00
6,800.00	91.00	359.80	5,889.64	1,123.05	-21.47	1,123.16	0.00	0.00	0.00
6,900.00	91.00	359.80	5,887.90	1,223.03	-21.82	1,223.15	0.00	0.00	0.00
7,000.00	91.00	359.80	5,886.15	1,323.02	-22.16	1,323.13	0.00	0.00	0.00
7,100.00	91.00	359.80	5,884.41	1,423.00	-22.50	1,423.12	0.00	0.00	0.00
7,200.00	91.00	359.80	5,882.66	1,522.99	-22.84	1,523.10	0.00	0.00	0.00
7,300.00	91.00	359.80	5,880.92	1,622.97	-23.18	1,623.08	0.00	0.00	0.00
7,400.00	91.00	359.80	5,879.17	1,722.95	-23.53	1,723.07	0.00	0.00	0.00
7,500.00	91.00	359.80	5,877.43	1,822.94	-23.87	1,823.05	0.00	0.00	0.00
7,600.00	91.00	359.80	5,875.68	1,922.92	-24.21	1,923.04	0.00	0.00	0.00
7,700.00	91.00	359.80	5,873.94	2,022.91	-24.55	2,023.02	0.00	0.00	0.00
7,800.00	91.00	359.80	5,872.19	2,122.89	-24.90	2,123.01	0.00	0.00	0.00
7,900.00	91.00	359.80	5,870.45	2,222.87	-25.24	2,222.99	0.00	0.00	0.00
8,000.00	91.00	359.80	5,868.70	2,322.86	-25.58	2,322.97	0.00	0.00	0.00
8,100.00	91.00	359.80	5,866.96	2,422.84	-25.92	2,422.96	0.00	0.00	0.00
8,200.00	91.00	359.80	5,865.21	2,522.83	-26.27	2,522.94	0.00	0.00	0.00
8,300.00	91.00	359.80	5,863.47	2,622.81	-26.61	2,622.93	0.00	0.00	0.00
8,400.00	91.00	359.80	5,861.72	2,722.80	-26.95	2,722.91	0.00	0.00	0.00
8,500.00	91.00	359.80	5,859.98	2,822.78	-27.29	2,822.90	0.00	0.00	0.00
8,600.00	91.00	359.80	5,858.23	2,922.76	-27.63	2,922.88	0.00	0.00	0.00
8,700.00	91.00	359.80	5,856.49	3,022.75	-27.98	3,022.86	0.00	0.00	0.00
8,800.00	91.00	359.80	5,854.74	3,122.73	-28.32	3,122.85	0.00	0.00	0.00
8,900.00	91.00	359.80	5,853.00	3,222.72	-28.66	3,222.83	0.00	0.00	0.00
9,000.00	91.00	359.80	5,851.25	3,322.70	-29.00	3,322.82	0.00	0.00	0.00
9,100.00	91.00	359.80	5,849.50	3,422.68	-29.35	3,422.80	0.00	0.00	0.00
9,200.00	91.00	359.80	5,847.76	3,522.67	-29.69	3,522.79	0.00	0.00	0.00
9,300.00	91.00	359.80	5,846.01	3,622.65	-30.03	3,622.77	0.00	0.00	0.00
9,400.00	91.00	359.80	5,844.27	3,722.64	-30.37	3,722.76	0.00	0.00	0.00
9,500.00	91.00	359.80	5,842.52	3,822.62	-30.72	3,822.74	0.00	0.00	0.00
9,600.00	91.00	359.80	5,840.78	3,922.61	-31.06	3,922.72	0.00	0.00	0.00
9,700.00	91.00	359.80	5,839.03	4,022.59	-31.40	4,022.71	0.00	0.00	0.00
9,800.00	91.00	359.80	5,837.29	4,122.57	-31.74	4,122.69	0.00	0.00	0.00

Database:	GCR DB	**Local Co-ordinate Reference:**	Well #6H
Company:	COG Operating LLC	**TVD Reference:**	GL @ 4092.00usft
Project:	Eddy County, New Mexico (NAD 27 NME)	**MD Reference:**	GL @ 4092.00usft
Site:	Flat Head Federal Com	**North Reference:**	Grid
Well:	#6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #2 12-11-13		

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)
9,900.00	91.00	359.80	5,835.54	4,222.56	-32.09	4,222.68	0.00	0.00	0.00
10,000.00	91.00	359.80	5,833.80	4,322.54	-32.43	4,322.66	0.00	0.00	0.00
10,100.00	91.00	359.80	5,832.05	4,422.53	-32.77	4,422.65	0.00	0.00	0.00
10,200.00	91.00	359.80	5,830.31	4,522.51	-33.11	4,522.63	0.00	0.00	0.00
10,300.00	91.00	359.80	5,828.56	4,622.50	-33.45	4,622.61	0.00	0.00	0.00
10,400.00	91.00	359.80	5,826.82	4,722.48	-33.80	4,722.60	0.00	0.00	0.00
10,500.00	91.00	359.80	5,825.07	4,822.46	-34.14	4,822.58	0.00	0.00	0.00
10,600.00	91.00	359.80	5,823.33	4,922.45	-34.48	4,922.57	0.00	0.00	0.00
10,700.00	91.00	359.80	5,821.58	5,022.43	-34.82	5,022.55	0.00	0.00	0.00
10,800.00	91.00	359.80	5,819.84	5,122.42	-35.17	5,122.54	0.00	0.00	0.00
10,900.00	91.00	359.80	5,818.09	5,222.40	-35.51	5,222.52	0.00	0.00	0.00
11,000.00	91.00	359.80	5,816.35	5,322.38	-35.85	5,322.50	0.00	0.00	0.00
11,100.00	91.00	359.80	5,814.60	5,422.37	-36.19	5,422.49	0.00	0.00	0.00
11,200.00	91.00	359.80	5,812.86	5,522.35	-36.54	5,522.47	0.00	0.00	0.00
11,300.00	91.00	359.80	5,811.11	5,622.34	-36.88	5,622.46	0.00	0.00	0.00
11,400.00	91.00	359.80	5,809.37	5,722.32	-37.22	5,722.44	0.00	0.00	0.00
11,500.00	91.00	359.80	5,807.62	5,822.31	-37.56	5,822.43	0.00	0.00	0.00
11,600.00	91.00	359.80	5,805.88	5,922.29	-37.90	5,922.41	0.00	0.00	0.00
11,700.00	91.00	359.80	5,804.13	6,022.27	-38.25	6,022.40	0.00	0.00	0.00
11,744.73	91.00	359.80	5,803.35	6,067.00	-38.40	6,067.12	0.00	0.00	0.00

TD at 11744.73 - PBHL-Flat Head #6H

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PP-Flat Head #6H - plan hits target center - Point	0.00	0.00	5,719.85	126.75	-4.43	669,451.65	684,271.27	32° 50' 20.29203 N	103° 44' 0.15818 W
PBHL-Flat Head #6H - plan hits target center - Point	-90.40	0.07	5,803.35	6,067.00	-38.40	675,391.90	684,237.30	32° 51' 19.07180 N	103° 44' 0.16092 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,379.21	5,379.21	0.00	0.00	KOP, 11°/100' Build
6,206.48	5,900.00	529.64	-18.50	Begin 3°/100' Turn
6,266.60	5,898.95	589.73	-19.65	Hold 91° Inc, 359.8° Azm
11,744.73	5,803.35	6,067.00	-38.40	TD at 11744.73

Project: Eddy County, New Mexico (NAD 27 NME)
Site: Flat Head Federal Com
Well: #6H
Wellbore: WB1
Design: Plan #2 12-11-13

PHOENIX TECHNOLOGY SERVICES

Azimuths to Grid North
True North: -0.33°
Magnetic North: 7.08°

Magnetic Field
Strength: 48713.6nT
Dip Angle: 60.66°
Date: 12/11/2013
Model: IGRF2010_14

WELL DETAILS

Ground Level 4092.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	669324.90	684275.70	32° 50' 19.03760 N	103° 44' 0.11474 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	5379.21	0.00	0.00	5379.21	0.00	0.00	0.00	0.00	0.00		KOP, 11°/100' Build
3	6206.48	91.00	358.00	5900.00	529.64	-18.50	11.00	358.00	529.74		Begin 3°/100' Turn
4	6266.60	91.00	359.80	5898.95	589.73	-19.65	3.00	89.99	589.85		Hold 91° Inc, 359.8° Azm
5	11744.73	91.00	359.80	5903.35	5067.00	-38.40	0.00	0.00	5067.12	PBHL-Flat Head #6H	TD at 11744.73

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP-Flat Head #6H	5719.85 - plan hits target center	126.75	-4.43	669451.65	684271.27	32° 50' 20.29202 N	103° 44' 0.15818 W	Point
PBHL-Flat Head #6H	5903.35 - plan hits target center	5067.00	-38.40	675381.90	684237.30	32° 51' 19.07179 N	103° 44' 0.16092 W	Point

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 2001

Local Origin: Well #6H, Grid North

Latitude: 32° 50' 19.03760 N
Longitude: 103° 44' 0.11474 W

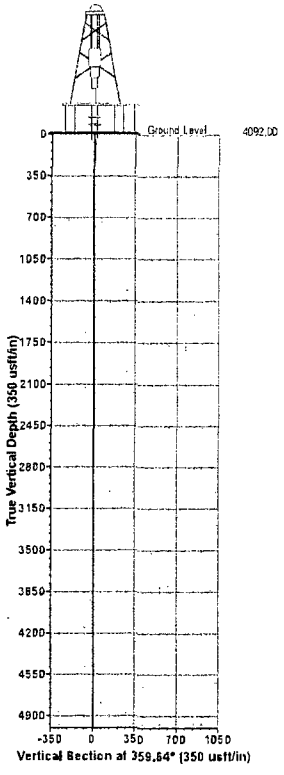
Grid East: 684275.70
Grid North: 669324.90
Scale Factor: 1.000

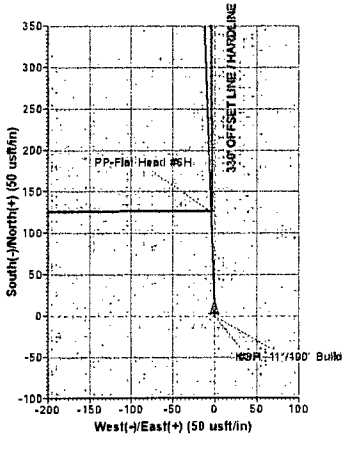
Geomagnetic Model: IGRF2010_14
Sample Date: 11-Dec-13
Magnetic Declination: 7.40°
Dip Angle from Horizontal: 60.66°
Magnetic Field Strength: 48714

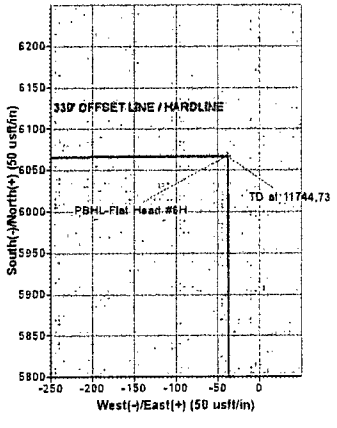
To convert a Magnetic Direction to a Grid Direction, Add 7.07°
To convert a Magnetic Direction to a True Direction, Add 7.40° East
To convert a True Direction to a Grid Direction, Subtract 0.33°

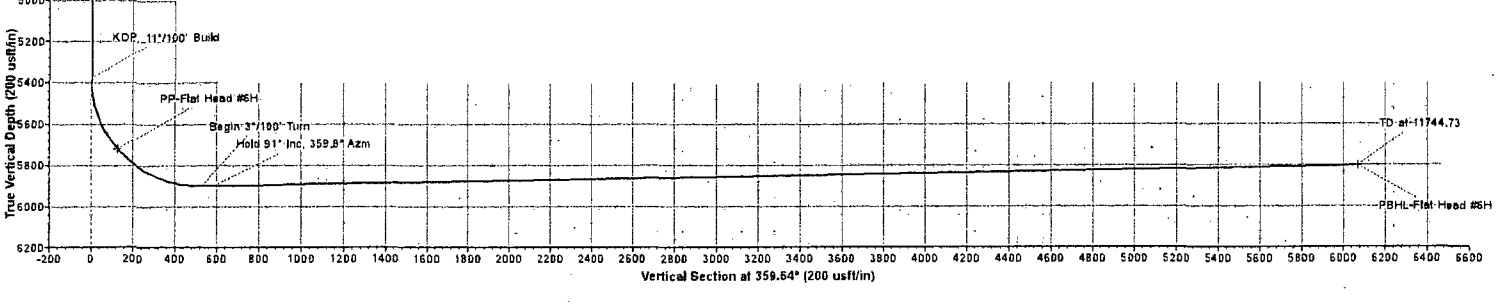
LEGEND

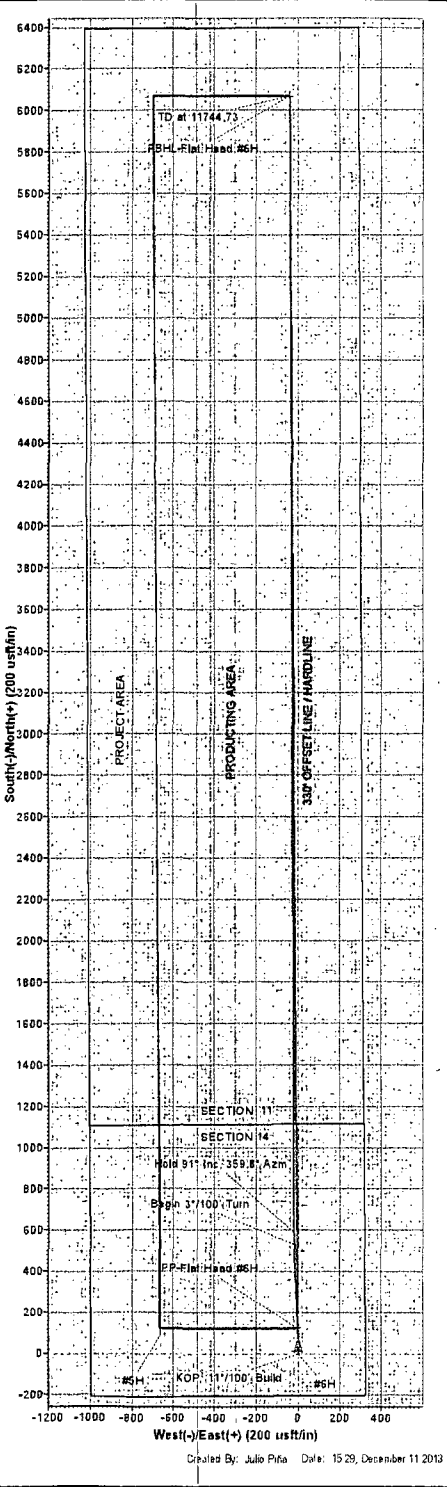
#6H, WB1, Plan #1 11-04-13 V0
Plan #2 12-11-13





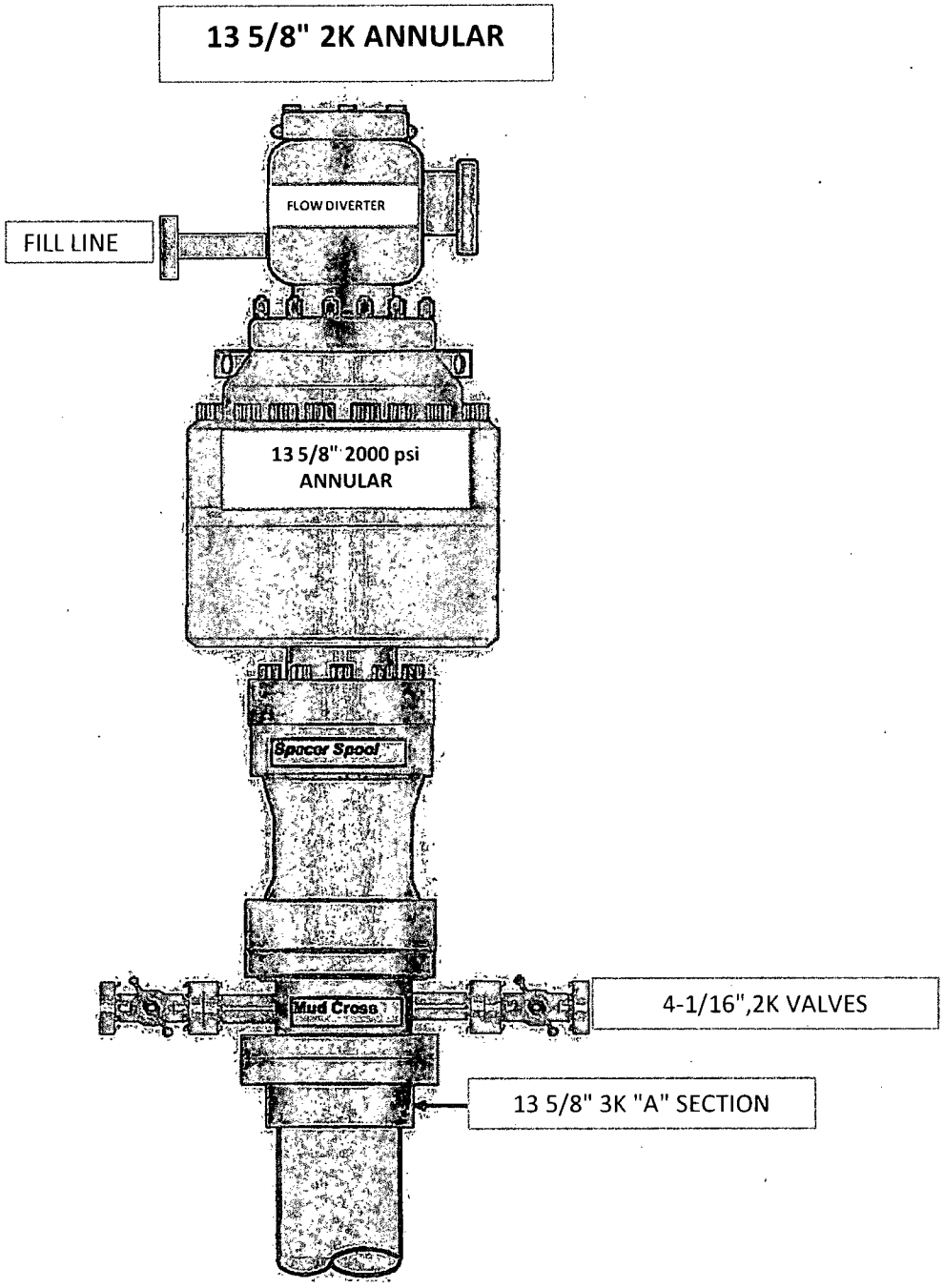






Created By: Julie Pirka Date: 15:29, December 11 2013

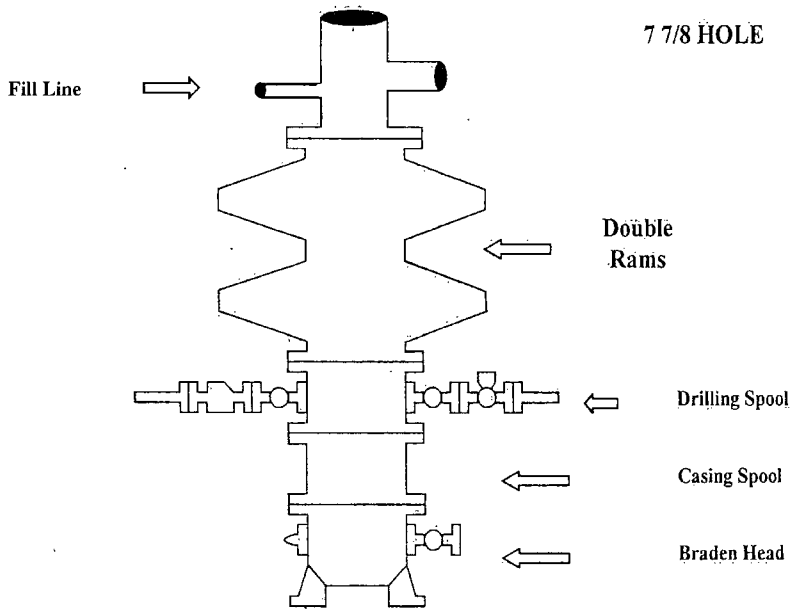
Exhibit #10


13 5/8" 2K ANNULAR
FLOW DIVERTER
FILL LINE
13 5/8" 2000 psi
ANNULAR
Spacer Spool
Mud Cross
4-1/16",2K VALVES
13 5/8" 3K "A" SECTION

COG Operating LLC

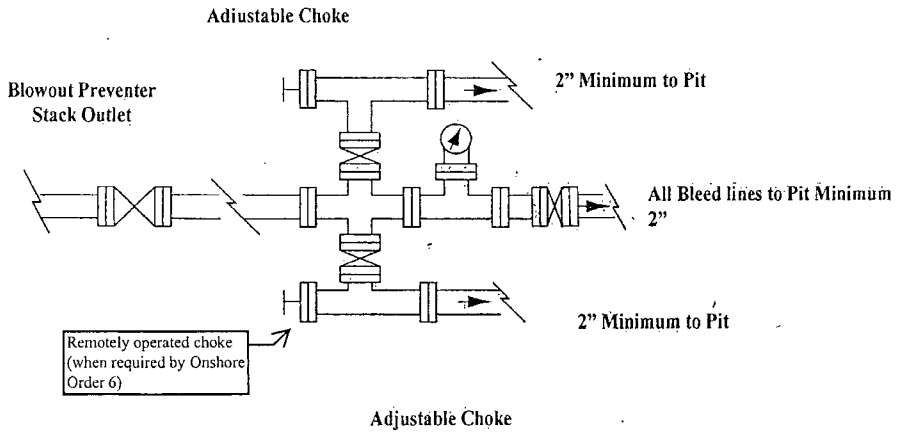
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required



NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

Closed Loop Operation & Maintenance Procedure

All drilling fluid circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll off containers are lined and de-watered with fluids re-circulated into system.

Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained 24 hrs./day by solids control personnel and or rig crews that stay on location.

Cuttings will be hauled to either:

CRI (permit number R9166)
or
GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

COG Operating LLC

Closed Loop Equipment Diagram