

**HOBBS OCD**

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

JUN 06 2016

**RECEIVED**

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. SHL: NMNM014164 BHL: FEE
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No. 8. Lease Name and Well No. (716277) Gatsby Federal Com #1H
2. Name of Operator COG Operating LLC. (229137)		9. API Well No. 30-025-43283
3a. Address 2208 West Main Street Artesia, NM 88210	3b. Phone No. (include area code) 575-748-6940	10. Field and Pool, or Exploratory (2200) Antelope Ridge; Bone Spring Kz
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 190' FNL & 380' FEL Lot 1 (NENE) Section 6-T245-R35E At proposed prod. Zone 330' FSL & 330' FEL Unit Letter P (SESE) Section 7-T245-R35E		11. Sec., T.R.M. or Blk and Survey or Area Section 6 - T245 - R35E
14. Distance in miles and direction from nearest town or post office* Approximately 11 miles from Jal		12. County or Parish Lea County
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 190'		13. State NM
16. No. of acres in lease NMNM014164: 1961.36	17. Spacing Unit dedicated to this well 320.04	
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 2706' BHL: 2661'	19. Proposed Depth TVD: 9,142' MD: 18,821'	20. BLM/BIA Bond No. on file NMB000740 & NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3455.9' GL	22. Approximate date work will start* 6/1/2016	23. Estimated duration 30 days

**NORTHODON  
LOCATION**

**24. Attachments**

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

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

25. Signature <i>Mayte Reyes</i>	Name (Printed/Typed) Mayte Reyes	Date 2-16-16
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Title Regulatory Analyst	
Approved by (Signature) <b>James A. Amos</b>	Name (Printed/Typed) Office <b>CARLSBAD FIELD OFFICE</b>
Date <b>MAY 26 2016</b>	

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 States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

**Capitan Controlled Water Basin**

*Kz*  
*06/06/16*

**Approval Subject to General Requirements  
& Special Stipulations Attached**

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL PM**

See attached NMOCD  
Conditions of Approval

**COG Operating LLC – Gatsby Federal Com 1H**

**1. Geologic Formations**

TVD of target	9,142' (EOL)	Pilot hole depth	No
MD at TD:	18,821'	Deepest expected fresh water:	405

**Basin**

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	769	Water	
Top of Salt	1049	Salt	
Base of Salt - Fletcher	4889	Salt	
Delaware - Lamar	5272	Salt Water	
Bell Canyon	5362	Salt Water	Seepage/Loss Cir
Cherry Canyon	6212	Oil/Gas	Seepage/Loss Cir
Brushy Canyon	7612	Oil/Gas	Seepage/Loss Cir
Bone Spring Lime	8827	Barren	
Upper Avalon Shale	8852	Oil/Gas – Target Zone	
Lower Avalon Shale	9222	Not Penetrated	

**2. Casing Program**

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	<del>790</del> 900'	13.375"	54.5	J55	STC	1.859	1.091	11.938
12.25"	0	4300	9.625"	40	J55	LTC	1.127	1.158	2.457
12.25"	4300	5290	9.625"	40	HCL80	LTC	1.508	1.685	13.364
8.75"	0	18,821'	5.5"	17	P110	LTC	1.724	3.119	2.863
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h Intermediate and Production Burst based on Pore Pressure (9.1 ppge) at Lateral TVD minus Gas Gradient (0.1 psi/ft).

Intermediate casing will always be kept 1/3 full while running as additional collapse protection.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	

See con

**COG Operating LLC – Gatsby Federal Com 1H**

Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 <sup>rd</sup> string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 <sup>nd</sup> string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

**3. Cementing Program** *See COA*

Casing	# Sks	Wt. lb/gal	Yld ft <sup>3</sup> /sack	H <sub>2</sub> O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	400	13.5	1.75	9.2	12	Lead: Class C + 4% Gel + 2% CaCl <sub>2</sub>
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl <sub>2</sub>
Intermediate	1465	12.7	1.9	10	18	Lead: Class C + 4% Gel + 2% CaCl <sub>2</sub>
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl
<u>Production</u>	400	10.3	3.62	21.9	72	Lead: Halliburton Tune Lite + adds
	2375	14.4	1.24	5.6	8	Tail: Versacem H + 2% Gel + 1% Salt

*See COA for cement deficiencies*

Volumes Subject to Observed Hole Conditions and/or Fluid Caliper Results

Lab reports with the 500 psi compressive strength time for the cement will be onsite for review. Casing String	TOC	% Excess
Surface	0'	85%
1 <sup>st</sup> Intermediate	0'	100%
Production	4790' (500' Tie-in to Int Casing)	Lead: 45% OH in KOP to ICP. 0% in 5.5" x 9.625" Intermediate Casing x Casing Annulus Tail: 15% OH from KOP to EOL

**4. Pressure Control Equipment**

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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COG Operating LLC – Gatsby Federal Com 1H

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	2M	Annular	x	2000 psi
			Blind Ram		2M
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram	x	3M
			Pipe Ram	x	
			Double Ram		
			Other*		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

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 (inside BOP) and choke lines and choke manifold. See attached schematics.

See COA  
↓

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
N	Are anchors required by manufacturer?
N	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

5. Mud Program

See COA

From	Depth		Type	Weight (ppg)	Viscosity	Water Loss
	To					
0	Surf. Shoe	<del>(790')</del>	FW Gel	8.6-8.8	28-34	N/C
Surf csg (790')	900'	9-5/8" Int shoe (5290')	Saturated Brine	10.0-10.2	28-34	N/C
9-5/8" Int Shoe (5290')		18,821' MD Lateral TD (18,821)	Cut Brine	8.6 – 9.4	28-34	N/C

## COG Operating LLC – Gatsby Federal Com 1H

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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### 6. Logging and Testing Procedures

Logging, Coring and Testing.	
Y	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
N	No Logs are planned based on well control or offset log information.
N	Drill stem test? If yes, explain
N	Coring? If yes, explain

Additional logs planned	Interval
N	Resistivity Pilot Hole TD to ICP
N	Density Pilot Hole TD to ICP
Y	CBL Production casing (If cement not circulated to surface)
Y	Mud log Intermediate shoe to TD
N	PEX

### 7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4323 psi at 9205' TVD (EOC)
Abnormal Temperature	NO (147 deg F.)

No abnormal pressure or temperature conditions are anticipated. Sufficient mud materials to maintain mud properties and weight increase requirements will be kept on location at all times.

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

Hydrogen Sulfide (H <sub>2</sub> S) monitors will be installed prior to drilling out the surface shoe. If H <sub>2</sub> S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H <sub>2</sub> S is present
Y	H <sub>2</sub> S Plan attached

## COG Operating LLC – Gatsby Federal Com 1H

### 8. Other facets of operation

#### Directional Drilling and Anticollision Considerations

The directional plan and anti-collision plan(s) for this well is attached.

In the proximity of the lateral path of the proposed Gatsby Fed Com 1H is the Oxy USA Inc Allison Federal Com 1 (API 30-025-33129). This well is positioned 2310' FNL and 660' FEL of Section 7 and was drilled vertically to 14,367' TVD and is currently producing approximately 30 MCFD gas. Currently, only inclination surveys are available for this well. Maximum displacement calculation for the inclination surveys only indicate a maximum displacement of 263.7' at depth of passage of the Gatsby Fed Com 1H planned lateral path. This puts the maximum eastern extent of the Allison Federal Com 1 approximately 397' from the East Line of the Section or about 55' away from the planned lateral track. However, with displacements calculated with radius of uncertainty models, the separation factor of the two wellbores are below 1 for approximately 300'. If mechanically possible and Oxy USA Inc will allow, we will try to obtain a gyro survey in the Allison Federal Com 1 to reduce or eliminate any collision risks.

Is this a walking operation? NO

Will be pre-setting casing? NO If yes, describe.

#### Attachments

- Directional Plan with anti-collision assessment
- Pressure chart and Cert for Flexible Choke Line
- BOP & Choke Schematics
- C102 and supporting maps
- Rig plat
- H2S schematic
- H2S contingency plan
- Interim reclamation plat