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OCD Hobbs

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Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

## APPLICATION FOR PERMIT TO DRILL OR REENTER

| | |
|---|---|
| 1a. Type of work: ☑ DRILL ☐ REENTER | 5. Lease Serial No. SL:NMNM-0315712; BL:NMLC-064150 |
| 1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone | 6. If Indian, Allotee or Tribe Name N/A |
| 2. Name of Operator COG Operating LLC (229137) | 7. If Unit or CA Agreement, Name and No. N/A |
| 3a. Address One Concho Center, 600 W. Illinois Ave Midland, TX 79701 | 8. Lease Name and Well No. Sneed 9 Federal Com #11H (40134) |
| 3b. Phone No. *(include area code)* 432-685-4385 | 9. API Well No. 30-025- 43284 |
| 4. Location of Well *(Report location clearly and in accordance with any State requirements.*)* At surface SHL: 470' FNL & 150' FWL, Unit D, Sec 9 At proposed prod. zone BHL: 330' FNL & 988' FWL, Unit D, Sec 10 UNORTHODOX LOCATION | 10. Field and Pool, or Exploratory Maljamar; Yeso, West 44500 |
| | 11. Sec., T. R. M. or Blk. and Survey or Area SHL: Sec 9, T17S, R32E BHL: Sec 10, T17S, R32E |
| 14. Distance in miles and direction from nearest town or post office* 1 mile W from Maljamar, 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) 150' | 16. No. of acres in lease SHL: 760 BHL: 240.01 | 17. Spacing Unit dedicated to this well 200 |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 505.6' | 19. Proposed Depth TVD: 5603'; MD:11591' EOC: 5700' TVD | 20. BLM/BIA Bond No. on file NMB000740; NMB000215 |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) 4089' GL | 22. Approximate date work will start* 10/04/2016 | 23. Estimated duration 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)* Robyn M. Odom | Date 03/04/2016 |
| Title Regulatory Analyst | | |
| Approved by *(Signature)* James A. Amos | Name *(Printed/Typed)* | Date MAY 31 2016 |
| 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)

See attached NMOCD Conditions of Approval

Roswell Controlled Water Basin

KZ 06/06/16

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Approval Subject to General Requirements & Special Stipulations Attached

KZ

**COG Operating LLC**
**Sneed 9 Federal Com #11H**

## 1. Geologic Formations

| | | | |
|---|---|---|---|
| TVD of target | 5700' | Pilot hole depth | NA |
| MD at TD: | 11591' | Deepest expected fresh water: | 132' |

**Back Reef**

| Formation | Depth (TVD) from KB | Water/Mineral Bearing/ Target Zone? | Hazards* |
|---|---|---|---|
| Quaternary Fill | Surface | Fresh Water | |
| Rustler | 900' | Brackish Water | |
| Top of Salt | 1085' | Salt | |
| Tansill | 2115' | Barren | |
| Yates | 2210' | Oil/Gas | |
| Seven Rivers | 2550' | Oil/Gas | |
| Queen | 3170' | Oil/Gas | |
| Grayburg | 3610' | Oil/Gas | |
| San Andres | 3905' | Oil/Gas | |
| Glorieta | 5400' | Oil/Gas | |
| Paddock | 5465' | Target | |
| Blinebry | 5890' | Will not penetrate | |
| | | | |

*H2S, water flows, loss of circulation, abnormal pressures, etc.

## 2. Casing Program See COA

| Hole Size | Casing Interval From | Casing Interval To | Csg. Size | Weight (lbs) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17.5" | 0 | ~~935'~~ 970 | 13.375" | 48 | H40/J55 | STC | 1.79 | 3.28 | 7.41 |
| 12.25" | 0 | 2240' | 9.625" | 40 | J55 | LTC | 2.47 | 1.44 | 6.50 |
| 8.75" | 0 | 5229' | 7.0" | 29 | L80 | LTC | 3.17 | 1.33 | 2.25 |
| 8.75" | 5229' | 6057' | 5.5" | 17 | L80 | LTC | 2.29 | 1.26 | 3.90 |
| 7.875" | 6057' | 11591' | 5.5" | 17 | L80 | LTC | 2.29 | 1.26 | 8.08 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h
BLM standard formulas where used on all SF calculations
Assumed 9.2 ppg MW equivalent pore pressure from 9 5/8" shoe to Deepest TVD in wellbore.

**COG Operating LLC**
**Sneed 9 Federal Com #11H**

| | Y or N |
|---|---|
| Is casing new? If used, attach certification as required in Onshore Order #1 | Y |
| Is casing API approved? 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 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. | N |
| | |
| Is well located in SOPA but not in R-111-P? | N |
| If yes, are the first 2 strings cemented to surface and 3rd 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 2nd 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 ft3/sk | $H_20$ gal/sk | 500 psi Comp. Strength (hours) | Slurry Description |
|---|---|---|---|---|---|---|
| Surface Single Stage | 350 | 13.5 | 1.75 | 9.2 | 13 | Lead: Class C + 4% Gel + 2% $CaCl_2$ + 0.25 pps CF |
| | 350 | 14.8 | 1.32 | 6.3 | 6 | Tail: Class C + 2% $CaCl_2$ + 0.25 pps Celloflake |
| Inter. Single stage | 325 | 11.8 | 2.45 | 14.4 | 72 | Lead: 50:50:10 C: Poz:Gel w/ 5% Salt + 5 pps LCM + 0.25 pps Cello flake |
| | 225 | 14.8 | 1.32 | 6.3 | 6 | Tail: Class C w/ 2% $CaCl_2$ |
| See COA | **IF DV Tool +/- ~~995'~~** | | | | | |
| Inter. Multi-Stage | | | | | | |
| | 150 | 11.8 | 2.45 | 14.4 | 72 | 1st stage Lead: 50:50:10 C: Poz:Gel w/ 5% Salt + 5 pps LCM + 0.25 pps Cello flake |
| | 200 | 14.8 | 1.32 | 6.3 | 6 | 1st stage Tail: Class C w/ 2% Cacl2 |
| | 200 | 11.8 | 2.45 | 14.4 | 72 | 2nd stage Lead: 50:50:10 C: Poz:Gel w/ 5% Salt + 5 pps LCM + 0.25 pps Cello flake |

| | | | | | | |
|---|---|---|---|---|---|---|
| Prod. Single Stage | 450 | 12.5 | 2.01 | 11.4 | 22 | Lead: 35:65:6 C:Poz Gel w/5% salt + 5 pps LCM + 0.2% SMS + 1% FL-25 + 1% Ba-58+0.3% FL-52A + 0.125 pps CF |
| | 1250 | 14 | 1.37 | 6.4 | 10 | Tail: 50:50:2 C:Pox Gel w/5% salt+3 pps LCM + 0.6% SMS + 1% FL-25 +1% BA-58+ 0.125 pps CF |
| | **IF DV/ECP Tool +/- 4000'** | | | | | |
| Prod Multi-Stage | 650 | 12.5 | 2.01 | 11.4 | 22 | 2nd Stage Lead: 35:65;6 C:Poz Gel w/5% salt+5 pps LCM+0.2% SMS + 1% FL-25+1% BA-58+0.3% FL-52A+ 0.125 pps CF |
| | 150 | 16.8 | .99 | 4.8 | 6 | 2nd Stage Tail: Class"C" w/0.3% R-3 + 1.5% CD-32 |
| | 200 | 12.5 | 2.01 | 11.4 | 22 | 1st stage Lead: 35:65:6 C: PozGel w/5% salt + 5 pp LCM + 0.2% SMS + 1% FL-25+ 1% BA-58 + 0.3% FL-52A + 0.125 pps CF |
| | 1150 | 14 | 1.37 | 6.4 | 10 | 1st stage Tail: 50:50:2 C: PozGel w/5% salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.125 pps CF |

| Casing String | TOC | % Excess |
|---|---|---|
| Surface | 0' | 50% |
| Intermediate | 0' | 50% |
| Production | 0' | 35% |

**4. Pressure Control Equipment *** See attachment for further details*****

| | |
|---|---|
| No | A variance is requested for the use of a diverter on the surface casing. See attached for schematic. |

| 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 | | |
| | | | Pipe Ram | | |
| | | | Double Ram | | |
| | | | Other* | | |
| 8-3/4" & 7 7/8" | 13-5/8" | 2M | Annular | X | 2000 psi |
| | | | Blind Ram | | |
| | | | Pipe Ram | | |
| | | | Double Ram | | |
| | | | Other* | | |

*Specify if additional ram is utilized.

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.

| | |
|---|---|
| NA | Formation integrity test will be performed per Onshore Order #2.<br>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. |
| NA | 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. |
| NA | Are anchors required by manufacturer? |
| NA | 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.<br>• Provide description here<br>See attached schematic. |

**5. Mud Program**

| Depth | | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|---|
| From | To | | | | |
| 0 | Surf. shoe | FW Gel | 8.6-8.8 | 28-34 | N/C |
| Surf shoe | Int shoe | Saturated Brine | 10.0-10.2 | 28-34 | N/C |
| Int shoe | TD | FW-Cut Brine | 8.5-9.2 | 28-34 | N/C |

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 |

## 6. Logging and Testing Procedures

| Logging, Coring and Testing. | |
|---|---|
| X | Will run Cased hole GR/CNL from KOP to surface. Stated logs run will be in the Completion Report and submitted to the BLM. |
| No | Open hole logs are planned from KOP to Intermediate casing shoe. |
| No | Drill stem test? If yes, explain |
| No | Coring? If yes, explain |
| | |

| Additional logs planned | | Interval |
|---|---|---|
| | Resistivity | Int. shoe to KOP |
| | Density | Int. shoe to KOP |
| | CBL | Production casing |
| X | Mud log | Intermediate shoe to TD |
| | PEX/HRLA/HNGS | Intermediate shoe to KOP |

## 7. Drilling Conditions See COA

| Condition | Specify what type and where? |
|---|---|
| BH Pressure at deepest TVD | 2508 psi |
| Abnormal Temperature | No |

Mitigation measure for abnormal conditions.

| Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S 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. | |
|---|---|
| Yes ~~No~~ | H2S is present |
| Yes | H2S Plan attached |

## 8. Other facets of operation

Is this a walking operation? No.
Will be pre-setting casing? No
All perforated intervals will be fracture stimulated

Attachments:
Directional Plan
Multi-stage Cement details
BOP description

**Multi-stage Cement details:**

**Discussion of DV Tool cement options:**

9 5/8" DV tool cement option is proposed for approval. This may become necessary if lost circulation occurs while drilling the 12 ¼" intermediate hole. DV tool depth will be based on hole conditions. Cement volumes will be adjusted proportionally. DV Tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe.

7" DV tool cement option is proposed for approval. This may become necessary if water flows in the San Andres are encountered. These water flows normally occur in areas where produced water disposal is happening. This dense cement is used to combat water flows. This cement recipe also has a right angle set time and is mixed a little under saturated so the water flow will be absorbed by cement. DV tool depth will be based on hole conditions. Cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe.

CUB 3/1/16