

15-893

**UNORTHODOX
LOCATION**

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Handwritten: **RECEIVED**

APR 18 2016

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		7. If Unit or CA Agreement, Name and No.	
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		8. Lease Name and Well No. [316103] Squints Federal Com #4H	
2. Name of Operator COG Operating LLC. [229137]		9. API Well No. 30-029-43164	
3a. Address 2208 West Main Street Artesia, NM 88210	3b. Phone No. (include area code) 575-748-6940	10. Field and Pool, or Exploratory OJO Chiso; Bone Spring (96553)	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 190' FSL & 660' FWL Unit Letter M (SWSW) Sec. 27.T22S.R34E SHL At proposed prod. Zone 330' FNL & 660' FWL Unit Letter D (NWNW) Sec 22.T22S.R34E BHL		11. Sec., T.R.M. or Blk and Survey or Area Sec. 27 - T22S - R34E	
14. Distance in miles and direction from nearest town or post office* About 17 miles from Eunice		12. County or Parish Lea County	13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 190'	16. No. of acres in lease NMNM043565: 640 NMNM043564: 1,920	17. Spacing Unit dedicated to this well 320	
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 30' (Prop. Squints #8H) BHL: 6803'	19. Proposed Depth TVD: 11,105' MD: 20,940'	20. BLM/BIA Bond No. on file NMB000740 & NMB000215	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3405.0' GL	22. Approximate date work will start* 10/1/2015	23. Estimated duration 30 days	

24. Attachments

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

- Well plat certified by a registered surveyor.
- A Drilling Plan
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).
- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- Operator certification
- 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 7-20-15
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Approved by (Signature) <i>/s/ STEPHEN J. CAPPEL</i>		Name (Printed/Typed)	Date APR 14 2016
Title FOR FIELD MANAGER		Office BLM-CARLSBAD FIELD OFFICE	

Application approval do
conduct operations ther
Conditions of approval,
Title 18 U.S.C. Section 1
States any false, fictitio

The NMOCD Gas Capture Plan notice has been posted on the web site under Announcements/Notice to Operators. A copy of the GCP form is included with the notice and is also in the Forms section under Unnumbered forms. Please submit accordingly in a timely manner.

rights in the subject lease which would entitle the applicant to
APPROVAL FOR TWO YEARS
nd willfully to make to any department or agency of the United
ction.

(Continued on page 2)

Capitan Controlled Water Basin

Witness Surface & Intermediate Casing *(Instructions on page 2)

**APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED**

*Kw
04/18/16*

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

APR 22 2016

COG Operating LLC, Squints Federal 4H

1. Geologic Formations

TVD of target	11105'	Pilot hole depth	NA
MD at TD:	20940'	Deepest expected fresh water:	605'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	1673'	Water	
Top of Salt	1869'	Salt	
Tansill	3609'	Barren	
Yates	3688'	Oil/Gas	
Capitan Reef	4017'	Water	Possible lost circ
Delaware Group	5285'	Oil/Gas	Possible lost circ
Bone Spring	8506'	Oil/Gas	
3 rd Bone Spring Sand	10947'	Target Zone	
Wolfcamp	11315'	Oil/Gas	

2. Casing Program

See COA

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0'	1910' 1800'	13.375"	54.5	J55	STC	1.33	1.03	5.24
12.25"	0'	5350' 5600'	9.625"	40	L80	BTC	1.17	1.09	4.09
8.75"	0'	20940'	5-1/2"	17	P110	BTC	1.42	2.01	*1.53D
BLM Minimum Safety Factor							1.125	1.00	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
- BLM standard formulas were used on all SF calculations.
- Used 9.1 PPG for pore pressure calculations
- Will set DV tool within 100' of the top of the Capitan Reef. Estimated setting depth is 3920'.
- *Explanation for SF's below BLM's minimum standards:

- 5-1/2" 17# P110 BTC SF Tension = 1.53D.

Approximately 49% of the string length is below the KOP; therefore most of the string weight below the KOP will be supported by the bottom of the hole. The net effect on tension for this portion of the string would be the friction factor (~ 0.30 – 0.45) of the lateral times the supported string weight.

COG Operating LLC, Squints Federal 4H

	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).	N
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?	Y
If yes, does production casing cement tie back a minimum of 50' above the Reef?	Y
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 3 rd 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 nd 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?	

2. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	770	13.5	1.75	9.2	13	Lead: Class C + 4% Gel + 2% CaCl ₂
	275	14.8	1.34	6.4	6	Tail: Class C + 2% CaCl ₂
Inter. Stg 1	285	12.9	1.92	10.0	12	Lead: Class C Lite (65:35:6) + 4% Salt + 5# Korseal
	200	14.8	1.34	6.4	6	Tail: Class C
Inter. Stg 2	970	12.9	1.92	10.0	12	Lead: Class C Lite (65:35:6) + 4% Salt + 5# Korseal
	200	14.8	1.34	6.4	6	Tail: Class C
Prod.	1075	10.3	3.52	21.3	75	Lead: Halliburton Tuned Lite w/ 2# korseal, 1.5# salt, 1/4# D-Air 5000, 1/8# PEF, etc
	2470	14.4	1.25	5.7	22	Tail: 50:50:2 H blend (FR, Retarder, FL adds as necessary)

Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

COG Operating LLC, Squints Federal 4H

Casing String	TOC	% Excess
Surface	0'	36%
Intermediate – Stage 1	3920'	51%
Intermediate – Stage 2	0'	124%
Production	0'	39%

Pilot hole depth: NA

KOP: 10628'

4. Pressure Control Equipment

See COP

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

* Actual equipment is 13-5/8" 5M Hydril Annular, will use for 2M WP System.

** - Actual equipment is 13-5/8" 5M Hydril Annular & 13-5/8" 10M Cameron triple ram, will use for ~~3M~~ WP System.

5M must test to 5,000 psi

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.

COG Operating LLC, Squints Federal 4H

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.
	Are anchors required by manufacturer? No.
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. See attached schematic.

5. Mud Program

See COA

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. shoe	FW Gel	8.6 – 9.0	28-34	N/C
Surf csg	Int shoe	*Saturated Brine	10.0 - 10.2	28-34	N/C
Int shoe	TMD	Cut Brine	8.6 - 9.4	28-34	N/C

*If lost circulation is encountered, will switch to fresh water.

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?	Pason PVT
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6. Logging and Testing Procedures

Logging, Coring and Testing.	
X	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.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned	Interval
X Mud log	Production

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7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	5283 psi – 3 rd Bone Spring Sand (11165' TVD)
Abnormal Temperature	No

Mitigation measure for abnormal conditions.

- Lost circulation material/sweeps/mud scavengers.
- Maintain stock of LCM and weighting materials onsite.

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ 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 ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? Yes. *See COA*
 Will be pre-setting casing? No.
 Will well be hydraulically fractured? Yes.

Attachments

- Directional Plan
- Anticollision Report
- BOP & Choke Schematics
- C102 and supporting maps
- Rig plat
- H₂S schematic
- H₂S contingency plan
- Interim reclamation plat