Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

FORM 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.

HOBBS OCD
DEC 12 2012
RECEIVED

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMNM122620

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
AIRACUDA FEDERAL 2H

2. Name of Operator
COG OPERATING LLC
Contact: DEBORA WILBOURN
E-Mail: dwilbourn@concho.com

9. API Well No.
30-025-40407

3a. Address
2208 W MAIN ST
ARTESIA, NM 88210

3b. Phone No. (include area code)
Ph: 575-748-6958

10. Field and Pool, or Exploratory
WILDCAT; BONE SPRING
(97903)

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 31 T25S R33E NWNE 330FNL 1980FEL

11. County or Parish, and State
LEA COUNTY, NM

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 to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ 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 recomplete 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 recompletion 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 to original APD:

OPER. OGRID NO. 229137
PROPERTY NO. 37863
POOL CODE 97903
EFF. DATE 10/5/2012
API NO. 30-025-40407

SUBJECT TO LIKE APPROVAL BY STATE

CHANGE WELL NAME
From: Airacuda 31 Federal #2H
To: Airacuda Federal #2H

PRODUCTION CASING SECTION:
Drill 7-7/8? PH to 10,200?. (WILL NOT penetrate the Wolfcamp, TD in 1st BSS)
Run OH logs for TVD determination.
Plug back entire PH with the following plugs:
PHTD ? 9600? with 200 sx (600?) Class H plug @ 17.2 ppg/0.98 yield

SEE ATTACHED FOR CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #161295 verified by the BLM Well Information System
For COG OPERATING LLC, sent to the Hobbs
Committed to AFMSS for processing by KURT SIMMONS on 11/29/2012 ()

Name *(Printed/Typed)* DEBORA WILBOURN — Title DRLG ENGINEERING TECH

Signature (Electronic Submission) — Date 11/28/2012

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED
DEC 10 2012
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

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 #161295 that would not fit on the form

32. Additional remarks, continued

9600? ? 9100? with 200 sx (500?) Class H plug @ 17.2 ppg/0.98 yield
Kick off and drill 7-7/8? curve & lateral to 14,270? MD/9850? TVD (see attached directional plan)
Run 5-1/2? 17# P-110 LTC csg to TD
Cmt in 1 stage with:
Lead: 1000 sx 50:50:10 H + Salt + Gilsonite + 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

BOPE:
Since the Wolfcamp will not be penetrated as originally proposed, COG Operating LLC will utilize 2M & 3M systems as follows.
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.

CRESCENT DIRECTIONAL DRILLING

COG Operating LLC

Lea County, NM (NAD 83)
Airacuda Federal
#2H

OH

Plan: Plan #1

Standard Planning Report

20 November, 2012

CONCHO

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #2H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Site:	Airacuda 23 Federal	**North Reference:**	Grid
	#2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project Lea 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 Airacuda Federal

Site Position:		**Northing:**	398,414.06 usft	**Latitude:**	32° 5' 35.700 N
From:	Map	**Easting:**	765,583.91 usft	**Longitude:**	103° 36' 33.137 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	8-3/4 "	**Grid Convergence:**	0.38 °

Well #2H

Well Position	**+N/-S**	0.0 usft	**Northing:**	398,414.06 usft	**Latitude:**	32° 5' 35.700 N
	+E/-W	0.0 usft	**Easting:**	765,583.91 usft	**Longitude:**	103° 36' 33.137 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	3,401.7 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/20/2012	7.41	60.05	48,433

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	179.63

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	
9,372.5	0.00	0.00	9,372.5	0.0	0.0	0.00	0.00	0.00	0.00	
10,122.5	90.00	179.63	9,850.0	-477.5	3.1	12.00	12.00	0.00	179.63	
14,270.5	90.00	179.63	9,850.0	-4,625.3	30.1	0.00	0.00	0.00	0.00	PBHL (A23#2H)

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Well:	#2H	**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

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #2H
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Site:	Airacuda 23 Federal	**North Reference:**	Grid
Well:	#2H	**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)
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
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00
9,372.5	0.00	0.00	9,372.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 9372.5' MD, 9372.5' TVD, 0.00° INC, 0.00° AZI, 0.0' VS									
9,375.0	0.30	179.63	9,375.0	0.0	0.0	0.0	11.83	11.83	0.00
9,400.0	3.30	179.63	9,400.0	-0.8	0.0	0.8	12.00	12.00	0.00
9,425.0	6.30	179.63	9,424.9	-2.9	0.0	2.9	12.00	12.00	0.00
9,450.0	9.30	179.63	9,449.7	-6.3	0.0	6.3	12.00	12.00	0.00
9,475.0	12.30	179.63	9,474.2	-11.0	0.1	11.0	12.00	12.00	0.00
9,500.0	15.30	179.63	9,498.5	-16.9	0.1	16.9	12.00	12.00	0.00
9,525.0	18.30	179.63	9,522.4	-24.1	0.2	24.1	12.00	12.00	0.00
9,550.0	21.30	179.63	9,545.9	-32.6	0.2	32.6	12.00	12.00	0.00
9,575.0	24.30	179.63	9,569.0	-42.3	0.3	42.3	12.00	12.00	0.00
9,600.0	27.30	179.63	9,591.5	-53.2	0.3	53.2	12.00	12.00	0.00
9,625.0	30.30	179.63	9,613.4	-65.2	0.4	65.2	12.00	12.00	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)
9,650.0	33.30	179.63	9,634.6	-78.4	0.5	78.4	12.00	12.00	0.00
9,675.0	36.30	179.63	9,655.2	-92.6	0.6	92.6	12.00	12.00	0.00
9,700.0	39.30	179.63	9,674.9	-108.0	0.7	108.0	12.00	12.00	0.00
9,725.0	42.30	179.63	9,693.8	-124.3	0.8	124.3	12.00	12.00	0.00
9,750.0	45.30	179.63	9,711.9	-141.6	0.9	141.6	12.00	12.00	0.00
9,775.0	48.30	179.63	9,729.0	-159.8	1.0	159.8	12.00	12.00	0.00
9,800.0	51.30	179.63	9,745.1	-178.9	1.2	178.9	12.00	12.00	0.00
9,825.0	54.30	179.63	9,760.3	-198.8	1.3	198.8	12.00	12.00	0.00
9,850.0	57.30	179.63	9,774.3	-219.5	1.4	219.5	12.00	12.00	0.00
9,875.0	60.30	179.63	9,787.3	-240.9	1.6	240.9	12.00	12.00	0.00
9,900.0	63.30	179.63	9,799.1	-262.9	1.7	262.9	12.00	12.00	0.00
9,925.0	66.30	179.63	9,809.7	-285.5	1.9	285.5	12.00	12.00	0.00
9,950.0	69.30	179.63	9,819.2	-308.7	2.0	308.7	12.00	12.00	0.00
9,975.0	72.30	179.63	9,827.4	-332.3	2.2	332.3	12.00	12.00	0.00
10,000.0	75.30	179.63	9,834.4	-356.3	2.3	356.3	12.00	12.00	0.00
10,025.0	78.30	179.63	9,840.1	-380.6	2.5	380.6	12.00	12.00	0.00
10,050.0	81.30	179.63	9,844.5	-405.2	2.6	405.2	12.00	12.00	0.00
10,075.0	84.30	179.63	9,847.6	-430.0	2.8	430.0	12.00	12.00	0.00
10,100.0	87.30	179.63	9,849.5	-454.9	3.0	454.9	12.00	12.00	0.00
10,122.5	90.00	179.63	9,850.0	-477.4	3.1	477.4	12.00	12.00	0.00
EOC - 10122.6' MD, 9850.0' TVD, 90.00° INC, 179.63° AZI, 477.4' VS									
10,200.0	90.00	179.63	9,850.0	-554.9	3.6	554.9	0.01	0.01	0.00
10,300.0	90.00	179.63	9,850.0	-654.9	4.3	654.9	0.00	0.00	0.00
10,400.0	90.00	179.63	9,850.0	-754.9	4.9	754.9	0.00	0.00	0.00
10,500.0	90.00	179.63	9,850.0	-854.9	5.6	854.9	0.00	0.00	0.00
10,600.0	90.00	179.63	9,850.0	-954.9	6.2	954.9	0.00	0.00	0.00
10,700.0	90.00	179.63	9,850.0	-1,054.9	6.9	1,054.9	0.00	0.00	0.00
10,800.0	90.00	179.63	9,850.0	-1,154.9	7.5	1,154.9	0.00	0.00	0.00
10,900.0	90.00	179.63	9,850.0	-1,254.9	8.2	1,254.9	0.00	0.00	0.00
11,000.0	90.00	179.63	9,850.0	-1,354.9	8.8	1,354.9	0.00	0.00	0.00
11,100.0	90.00	179.63	9,850.0	-1,454.9	9.5	1,454.9	0.00	0.00	0.00
11,200.0	90.00	179.63	9,850.0	-1,554.9	10.1	1,554.9	0.00	0.00	0.00
11,300.0	90.00	179.63	9,850.0	-1,654.9	10.8	1,654.9	0.00	0.00	0.00
11,400.0	90.00	179.63	9,850.0	-1,754.9	11.4	1,754.9	0.00	0.00	0.00
11,500.0	90.00	179.63	9,850.0	-1,854.9	12.1	1,854.9	0.00	0.00	0.00
11,600.0	90.00	179.63	9,850.0	-1,954.9	12.7	1,954.9	0.00	0.00	0.00
11,700.0	90.00	179.63	9,850.0	-2,054.9	13.4	2,054.9	0.00	0.00	0.00
11,800.0	90.00	179.63	9,850.0	-2,154.9	14.0	2,154.9	0.00	0.00	0.00
11,900.0	90.00	179.63	9,850.0	-2,254.9	14.7	2,254.9	0.00	0.00	0.00
12,000.0	90.00	179.63	9,850.0	-2,354.9	15.3	2,354.9	0.00	0.00	0.00
12,100.0	90.00	179.63	9,850.0	-2,454.9	16.0	2,454.9	0.00	0.00	0.00
12,200.0	90.00	179.63	9,850.0	-2,554.9	16.6	2,554.9	0.00	0.00	0.00
12,300.0	90.00	179.63	9,850.0	-2,654.9	17.3	2,654.9	0.00	0.00	0.00
12,400.0	90.00	179.63	9,850.0	-2,754.9	17.9	2,754.9	0.00	0.00	0.00
12,500.0	90.00	179.63	9,850.0	-2,854.9	18.6	2,854.9	0.00	0.00	0.00
12,600.0	90.00	179.63	9,850.0	-2,954.9	19.2	2,954.9	0.00	0.00	0.00
12,700.0	90.00	179.63	9,850.0	-3,054.9	19.9	3,054.9	0.00	0.00	0.00
12,800.0	90.00	179.63	9,850.0	-3,154.9	20.5	3,154.9	0.00	0.00	0.00
12,900.0	90.00	179.63	9,850.0	-3,254.9	21.2	3,254.9	0.00	0.00	0.00
13,000.0	90.00	179.63	9,850.0	-3,354.9	21.8	3,354.9	0.00	0.00	0.00
13,100.0	90.00	179.63	9,850.0	-3,454.9	22.5	3,454.9	0.00	0.00	0.00
13,200.0	90.00	179.63	9,850.0	-3,554.9	23.1	3,554.9	0.00	0.00	0.00
13,300.0	90.00	179.63	9,850.0	-3,654.9	23.8	3,654.9	0.00	0.00	0.00
13,400.0	90.00	179.63	9,850.0	-3,754.9	24.4	3,754.9	0.00	0.00	0.00

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #2H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	WELL @ 3419.7usft (Silver Oak #12 - 18' KB)
Site:	Airacuda 23 Federal	**North Reference:**	Grid
Well:	#2H	**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)
13,500.0	90.00	179.63	9,850.0	-3,854.8	25.1	3,854.9	0.00	0.00	0.00
13,600.0	90.00	179.63	9,850.0	-3,954.8	25.7	3,954.9	0.00	0.00	0.00
13,700.0	90.00	179.63	9,850.0	-4,054.8	26.4	4,054.9	0.00	0.00	0.00
13,800.0	90.00	179.63	9,850.0	-4,154.8	27.0	4,154.9	0.00	0.00	0.00
13,900.0	90.00	179.63	9,850.0	-4,254.8	27.7	4,254.9	0.00	0.00	0.00
14,000.0	90.00	179.63	9,850.0	-4,354.8	28.3	4,354.9	0.00	0.00	0.00
14,100.0	90.00	179.63	9,850.0	-4,454.8	29.0	4,454.9	0.00	0.00	0.00
14,200.0	90.00	179.63	9,850.0	-4,554.8	29.7	4,554.9	0.00	0.00	0.00
14,270.5	90.00	179.63	9,850.0	-4,625.3	30.1	4,625.4	0.00	0.00	0.00
TD @ 14270.5' MD, 9850.0' TVD									

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
PBHL (A23#2H) - plan hits target center - Point	0.00	0.00	9,850.0	-4,625.3	30.1	393,788.71	765,614.02	32° 4' 49.928 N	103° 36' 33.147 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
9,372.5	9,372.5	0.0	0.0	KOP - 9372.5' MD, 9372.5' TVD, 0.00° INC, 0.00° AZI, 0.0' VS
10,122.5	9,850.0	-477.4	3.1	EOC - 10122.5' MD, 9850.0' TVD, 90.00° INC, 179.63° AZI, 477.4' VS
14,270.5	9,850.0	-4,625.3	30.1	TD @ 14270.5' MD, 9850.0' TVD

CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING LLC
LEASE NO.:	NM122620
WELL NAME & NO.:	AIRACUDA FEDERAL 2H
SURFACE HOLE FOOTAGE:	330' FNL & 1980' FEL
BOTTOM HOLE FOOTAGE	300' FSL & 1980' FEL
LOCATION:	Section 31, T. 25 S., R. 33 E., NMPM
COUNTY:	Lea County, New Mexico

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

☒ **Lea County**
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. **Hydrogen Sulfide has been reported as a hazard in formations deeper than the proposed depth. It is recommended that monitoring equipment be onsite for potential Hydrogen Sulfide. If Hydrogen Sulfide is encountered, please report measurements and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possible lost circulation in the Red Beds, Delaware and Bone Spring.
Possible water flows in the Salado, Castile, Delaware and Bone Spring.

1. The **13-3/8** inch surface casing shall be set at approximately **950** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

   a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** inch intermediate casing shoe shall be **3000 (3M)** psi.

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

    c. The results of the test shall be reported to the appropriate BLM office.

    d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

JAM 121012