

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.*5. Lease Serial No.
NMNM0536344

6. If Indian, Allottee or Tribe Name

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

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

COG OPERATING LLC

Contact: MAYTE X REYES

E-Mail: mreyes1@concho.com

3a. Address

2208 WEST MAIN STREET
ARTESIA, NM 88210

3b. Phone No. (include area code)

Ph: 575-748-6945

8. Well Name and No.

RESOLVER FEDERAL COM 2H

9. API Well No.

30-025-42170

10. Field and Pool, or Exploratory

DIAMONDTAIL;BONE SPRING

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 12 T23S R32E NENW 190FNL 2260FWL

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☐ Subsequent Report☐ Final Abandonment Notice☐ Acidize☐ Alter Casing☐ Casing Repair☐ Change Plans☐ Convert to Injection☐ Deepen☐ Fracture Treat☐ New Construction☐ Plug and Abandon☐ Plug Back☐ Production (Start/Resume)☐ Reclamation☐ Recomplete☐ Temporarily Abandon☐ Water Disposal☐ Water Shut-Off☐ Well Integrity☒ Other
Change to Original A
PD

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 approval for the following changes to the original APD.

Operator will drill an 8-3/4" Pilot hole to 12,500' and plug back as follows.

Bone Spring Lime 8896' Gas/Oil

Lower Avalon Shale 9522' Gas/Oil (Target Zone)

First Bone Spring Lime 10,049' Gas/Oil

Plug 1: 11,900' - 12,500': 280 sks Class H @ 0.98 cuft/sk, 17.2 ppg (10% excess)

Plug 2 (Kickoff Plug) 9,150' - 9,850': 330 sks Class H @ 0.98 cuft/sk, 17.2 ppg (10% excess)

Operator will drill 8-3/4" curve and lateral to approximately 14,382' MD. Will run 5-1/2", 17#

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

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

**Electronic Submission #319598 verified by the BLM Well Information System
For COG OPERATING LLC, sent to the Hobbs
Committed to AFMSS for processing by KENNETH RENNICK on 10/13/2015 ()**

Name (Printed/Typed) MAYTE X REYES

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 10/13/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Title

**APPROVED
PETROLEUM ENGINEER**

Date

OCT 19 2015

Office

Kenneth Rennick

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

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.

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 any statement 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 ****

NOV 04 2015

Additional data for EC transaction #319598 that would not fit on the form

32. Additional remarks, continued

P-110 LTC csg and cement to 4,500? in one stage as follows:

KOP - 9,348?. End of Curve / End Of Lateral TVD: 9,826?

Lead: 500 sacks Halliburton Tuned Light blend @ 3.48 cuft/sk, 10.4 ppg

Tail: 1400 sks Versacem 50:50:2 Class H + 1% Salt @ 1.25 cuft/sk, 14.4 ppg.



COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Resolver Federal Com

Well: #2H

Wellbore: OH

Plan: Design #1 (#2H/OH)

Ground Elevation: 3754.3
RKB Elevation: WELL @ 3774.3usft (Original Well Elev)
Rig Name: Original Well Elev

Northing 482989.80
Easting 717531.80
Latitude 32° 19' 33.203 N
Longitude 103° 37' 44.801 W

Section Details

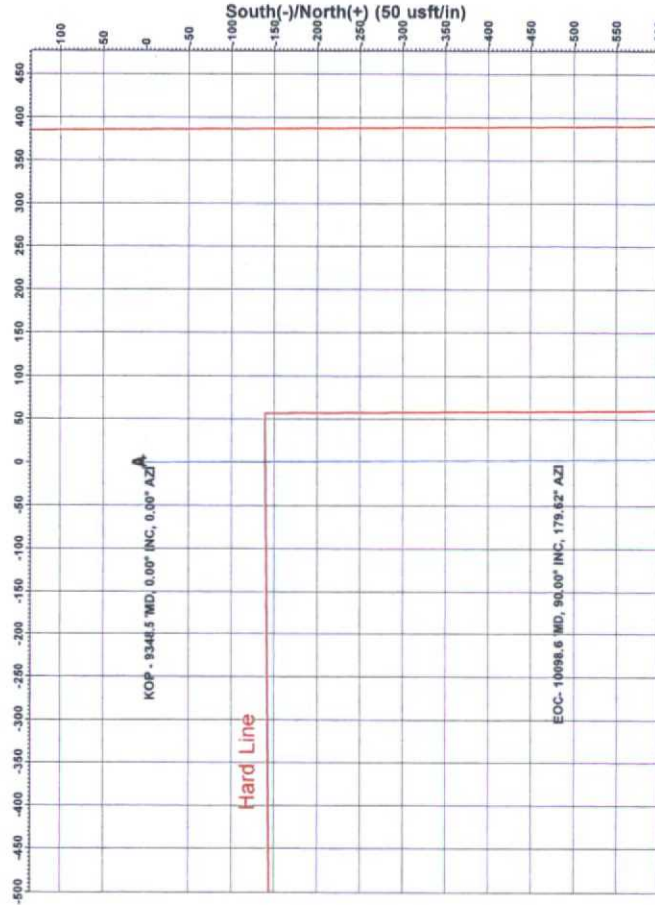
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	9348.5	0.00	0.00	9348.5	0.0	0.0	0.00	0.00	0.0
3	10098.6	90.00	179.62	9826.0	-477.5	3.2	12.00	179.62	477.5
4	14382.4	90.00	179.62	9826.0	-4761.2	31.6	0.00	0.00	4761.3

PBHL(resolver#2H)

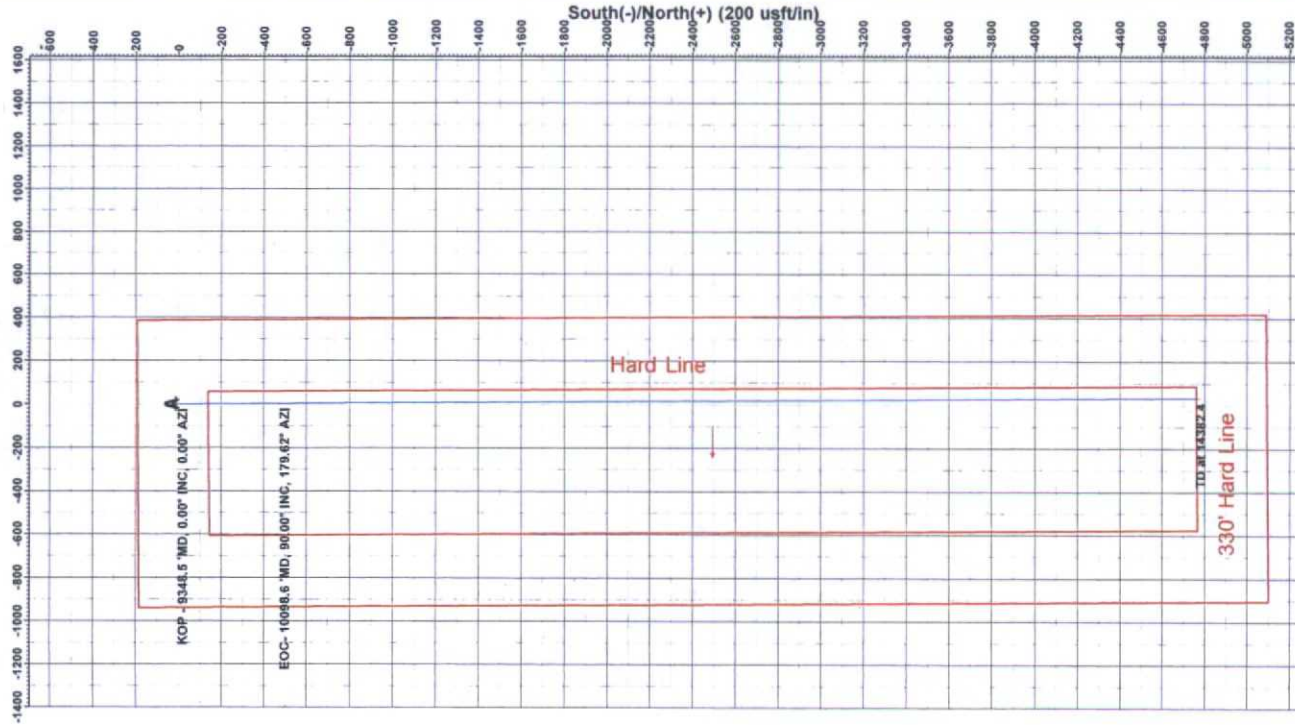
WELL DETAILS: #2H



West(-)/East(+) (50 usft/in)



West(-)/East(+) (200 usft/in)



#2H/Design #1

TD at 14382.4



Nexus Directional Solutions

Vertical Section at 179.62° (200 usft/in)

PROJECT DETAILS: Lea County, NM (NAD27 NME)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



COG Operating LLC

Lea County, NM (NAD27 NME)

Resolver Federal Com

#2H

OH

Plan: Design #1

Standard Planning Report

06 October, 2015

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3774.3usft (Original Well Elev)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	WELL @ 3774.3usft (Original Well Elev)
Site:	Resolver Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Project	Lea County, NM (NAD27 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		Resolver Federal Com			
Site Position:		Northing:	482,989.80 usft	Latitude:	32° 19' 33.203 N
From:	Map	Easting:	717,531.80 usft	Longitude:	103° 37' 44.801 V
Position Uncertainty:	3.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38

Well	#2H					
Well Position	+N/-S	0.0 usft	Northing:	482,989.80 usft	Latitude:	32° 19' 33.203 N
	+E/-W	0.0 usft	Easting:	717,531.80 usft	Longitude:	103° 37' 44.801 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	3,754.3 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/6/2015	7.09	60.16	48,238

Design	Design #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	179.62

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	
9,348.5	0.00	0.00	9,348.5	0.0	0.0	0.00	0.00	0.00	0.00	
10,098.6	90.00	179.62	9,826.0	-477.5	3.2	12.00	12.00	0.00	179.62	
14,382.4	90.00	179.62	9,826.0	-4,761.2	31.6	0.00	0.00	0.00	0.00	PBHL(resolver#2H)



Wellplanning Planning Report

Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Resolver Federal Com
Well: #2H
Wellbore: OH
Design: Design #1

Local Co-ordinate Reference:
TVD Reference: WELL @ 3774.3usft (Original Well Elev)
MD Reference: WELL @ 3774.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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



Wellplanning Planning Report

Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Resolver Federal Corn
Well: #2H
Wellbore: OH
Design: Design #1

Local Co-ordinate Reference: Well #2H
TVD Reference: WELL @ 3774.3usft (Original Well Elev)
MD Reference: WELL @ 3774.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
9,348.5	0.00	0.00	9,348.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 9348.5 'MD, 0.00° INC, 0.00° AZI									
9,350.0	0.18	179.62	9,350.0	0.0	0.0	0.0	12.00	12.00	0.00
9,375.0	3.18	179.62	9,375.0	-0.7	0.0	0.7	12.00	12.00	0.00
9,400.0	6.18	179.62	9,399.9	-2.8	0.0	2.8	12.00	12.00	0.00
9,425.0	9.18	179.62	9,424.7	-6.1	0.0	6.1	12.00	12.00	0.00
9,450.0	12.18	179.62	9,449.2	-10.7	0.1	10.7	12.00	12.00	0.00
9,475.0	15.18	179.62	9,473.5	-16.7	0.1	16.7	12.00	12.00	0.00
9,500.0	18.18	179.62	9,497.5	-23.8	0.2	23.8	12.00	12.00	0.00
9,525.0	21.18	179.62	9,521.0	-32.2	0.2	32.3	12.00	12.00	0.00
9,550.0	24.18	179.62	9,544.1	-41.9	0.3	41.9	12.00	12.00	0.00
9,575.0	27.18	179.62	9,566.6	-52.7	0.3	52.7	12.00	12.00	0.00
9,600.0	30.18	179.62	9,588.5	-64.7	0.4	64.7	12.00	12.00	0.00



Wellplanning Planning Report

Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Resolver Federal Com
Well: #2H
Wellbore: OH
Design: Design #1

Local Co-ordinate Reference: Well #2H
TVD Reference: WELL @ 3774.3usft (Original Well Elev)
MD Reference: WELL @ 3774.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
9,625.0	33.18	179.62	9,609.8	-77.8	0.5	77.8	12.00	12.00	0.00
9,650.0	36.18	179.62	9,630.4	-92.1	0.6	92.1	12.00	12.00	0.00
9,675.0	39.18	179.62	9,650.1	-107.3	0.7	107.3	12.00	12.00	0.00
9,700.0	42.18	179.62	9,669.1	-123.6	0.8	123.6	12.00	12.00	0.00
9,725.0	45.18	179.62	9,687.2	-140.9	0.9	140.9	12.00	12.00	0.00
9,750.0	48.18	179.62	9,704.3	-159.1	1.1	159.1	12.00	12.00	0.00
9,775.0	51.18	179.62	9,720.5	-178.1	1.2	178.1	12.00	12.00	0.00
9,800.0	54.18	179.62	9,735.7	-198.0	1.3	198.0	12.00	12.00	0.00
9,825.0	57.18	179.62	9,749.8	-218.7	1.5	218.7	12.00	12.00	0.00
9,850.0	60.18	179.62	9,762.8	-240.0	1.6	240.0	12.00	12.00	0.00
9,875.0	63.18	179.62	9,774.6	-262.0	1.7	262.0	12.00	12.00	0.00
9,900.0	66.18	179.62	9,785.3	-284.6	1.9	284.6	12.00	12.00	0.00
9,925.0	69.17	179.62	9,794.8	-307.7	2.0	307.7	12.00	12.00	0.00
9,950.0	72.17	179.62	9,803.1	-331.3	2.2	331.3	12.00	12.00	0.00
9,975.0	75.17	179.62	9,810.1	-355.3	2.4	355.3	12.00	12.00	0.00
10,000.0	78.17	179.62	9,815.9	-379.6	2.5	379.6	12.00	12.00	0.00
10,025.0	81.17	179.62	9,820.3	-404.2	2.7	404.2	12.00	12.00	0.00
10,050.0	84.17	179.62	9,823.5	-429.0	2.8	429.0	12.00	12.00	0.00
10,075.0	87.17	179.62	9,825.4	-453.9	3.0	454.0	12.00	12.00	0.00
10,098.6	90.00	179.62	9,826.0	-477.5	3.2	477.5	12.00	12.00	0.00
EOC- 10098.6 'MD, 90.00° INC, 179.62° AZI									
10,100.0	90.00	179.62	9,826.0	-478.9	3.2	478.9	0.00	0.00	0.00
10,200.0	90.00	179.62	9,826.0	-578.9	3.8	578.9	0.00	0.00	0.00
10,300.0	90.00	179.62	9,826.0	-678.9	4.5	678.9	0.00	0.00	0.00
10,400.0	90.00	179.62	9,826.0	-778.9	5.2	778.9	0.00	0.00	0.00
10,500.0	90.00	179.62	9,826.0	-878.9	5.8	878.9	0.00	0.00	0.00
10,600.0	90.00	179.62	9,826.0	-978.9	6.5	978.9	0.00	0.00	0.00
10,700.0	90.00	179.62	9,826.0	-1,078.9	7.2	1,078.9	0.00	0.00	0.00
10,800.0	90.00	179.62	9,826.0	-1,178.9	7.8	1,178.9	0.00	0.00	0.00
10,900.0	90.00	179.62	9,826.0	-1,278.9	8.5	1,278.9	0.00	0.00	0.00
11,000.0	90.00	179.62	9,826.0	-1,378.9	9.1	1,378.9	0.00	0.00	0.00
11,100.0	90.00	179.62	9,826.0	-1,478.9	9.8	1,478.9	0.00	0.00	0.00
11,200.0	90.00	179.62	9,826.0	-1,578.9	10.5	1,578.9	0.00	0.00	0.00
11,300.0	90.00	179.62	9,826.0	-1,678.9	11.1	1,678.9	0.00	0.00	0.00
11,400.0	90.00	179.62	9,826.0	-1,778.9	11.8	1,778.9	0.00	0.00	0.00
11,500.0	90.00	179.62	9,826.0	-1,878.9	12.5	1,878.9	0.00	0.00	0.00
11,600.0	90.00	179.62	9,826.0	-1,978.9	13.1	1,978.9	0.00	0.00	0.00
11,700.0	90.00	179.62	9,826.0	-2,078.9	13.8	2,078.9	0.00	0.00	0.00
11,800.0	90.00	179.62	9,826.0	-2,178.9	14.5	2,178.9	0.00	0.00	0.00
11,900.0	90.00	179.62	9,826.0	-2,278.9	15.1	2,278.9	0.00	0.00	0.00
12,000.0	90.00	179.62	9,826.0	-2,378.9	15.8	2,378.9	0.00	0.00	0.00
12,100.0	90.00	179.62	9,826.0	-2,478.9	16.4	2,478.9	0.00	0.00	0.00
12,200.0	90.00	179.62	9,826.0	-2,578.9	17.1	2,578.9	0.00	0.00	0.00
12,300.0	90.00	179.62	9,826.0	-2,678.9	17.8	2,678.9	0.00	0.00	0.00
12,400.0	90.00	179.62	9,826.0	-2,778.9	18.4	2,778.9	0.00	0.00	0.00
12,500.0	90.00	179.62	9,826.0	-2,878.9	19.1	2,878.9	0.00	0.00	0.00
12,600.0	90.00	179.62	9,826.0	-2,978.9	19.8	2,978.9	0.00	0.00	0.00
12,700.0	90.00	179.62	9,826.0	-3,078.9	20.4	3,078.9	0.00	0.00	0.00
12,800.0	90.00	179.62	9,826.0	-3,178.9	21.1	3,178.9	0.00	0.00	0.00
12,900.0	90.00	179.62	9,826.0	-3,278.9	21.7	3,278.9	0.00	0.00	0.00
13,000.0	90.00	179.62	9,826.0	-3,378.9	22.4	3,378.9	0.00	0.00	0.00
13,100.0	90.00	179.62	9,826.0	-3,478.9	23.1	3,478.9	0.00	0.00	0.00
13,200.0	90.00	179.62	9,826.0	-3,578.9	23.7	3,578.9	0.00	0.00	0.00
13,300.0	90.00	179.62	9,826.0	-3,678.9	24.4	3,678.9	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3774.3usft (Original Well Elev)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	WELL @ 3774.3usft (Original Well Elev)
Site:	Resolver Federal Com	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #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)
13,400.0	90.00	179.62	9,826.0	-3,778.9	25.1	3,778.9	0.00	0.00	0.00
13,500.0	90.00	179.62	9,826.0	-3,878.9	25.7	3,878.9	0.00	0.00	0.00
13,600.0	90.00	179.62	9,826.0	-3,978.9	26.4	3,978.9	0.00	0.00	0.00
13,700.0	90.00	179.62	9,826.0	-4,078.9	27.1	4,078.9	0.00	0.00	0.00
13,800.0	90.00	179.62	9,826.0	-4,178.9	27.7	4,178.9	0.00	0.00	0.00
13,900.0	90.00	179.62	9,826.0	-4,278.9	28.4	4,278.9	0.00	0.00	0.00
14,000.0	90.00	179.62	9,826.0	-4,378.8	29.0	4,378.9	0.00	0.00	0.00
14,100.0	90.00	179.62	9,826.0	-4,478.8	29.7	4,478.9	0.00	0.00	0.00
14,200.0	90.00	179.62	9,826.0	-4,578.8	30.4	4,578.9	0.00	0.00	0.00
14,300.0	90.00	179.62	9,826.0	-4,678.8	31.0	4,678.9	0.00	0.00	0.00
14,382.4	90.00	179.62	9,826.0	-4,761.2	31.6	4,761.3	0.00	0.00	0.00

TD at 14382.4 - PBHL(resolver#2H)

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL(resolver#2H)	0.00	0.00	9,826.0	-4,761.2	31.9	478,228.60	717,563.70	32° 18' 46.087 N	103° 37' 44.794 W
- plan misses target center by 0.3usft at 14382.4usft MD (9826.0 TVD, -4761.2 N, 31.6 E)									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,348.5	9,348.5	0.0	0.0	KOP - 9348.5 'MD, 0.00° INC, 0.00° AZI
10,098.6	9,826.0	-477.5	3.2	EOC- 10098.6 'MD, 90.00° INC, 179.62° AZI
14,382.4	9,826.0	-4,761.2	31.6	TD at 14382.4

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

RESOLVER FEDERAL COM 2H

API: 30-025-42170

COG Operating LLC

Section 12, T. 23 S., R 32 E.

Lea County

Original COA still applies, except for the replacement of the cement filled requirements for the pilot hole and for the 5-1/2th production casing. This has been replaced with the following:

1. Pilot hole is required to have a plug at the bottom of the hole. If more than two plugs are set, the BLM is to be contacted, (575) 393-3612, prior to tag of bottom plug.

This bottom plug shall be Class H and a minimum of **225** feet in length. The top of the bottom plug shall be adjusted to a top of **11,850** feet to comply with New Mexico Oil Conversation Division (NMOCD) minimum requirement of 2000 feet spacing between plugs for open hole intervals. This also ensures that the top of Wolfcamp is covered.

The top plug, or kick-off plug shall also be Class H and a minimum of **200** feet in length. Top plug is approved as proposed by Operator.

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

☒ Cement should tie-back at least **500** feet into previous casing string. Operator shall provide method of verification.

KGR 10192015