

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTNMOCD
HobbsFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**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.
NMNM77090

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
SOMBRERO FEDERAL COM 4H9. API Well No.
30-025-4328610. Field and Pool or Exploratory Area
RED HILLS;BONE SPRING, N11. County or Parish, State
LEA COUNTY, NM

SUBMIT IN TRIPLICATE - Other instructions on page 2

JAN 16 2018

RECEIVED

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
COG OPERATING LLC
Contact: MAYTE X REYES
E-Mail: mreyes1@concho.com3a. Address
2208 WEST MAIN STREET
ARTESIA, NM 882103b. Phone No. (include area code)
Ph: 575-748-69454. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 13 T24S R34E SWSW 460FSL 380FWL

12. CHECK THE 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	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original APD
	☐ 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 recompleat 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 must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must 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 approved APD.

BHL
From: 2310' FSL & 380' FWL Section 12. T24S. R34E
To: 2440' FSL & 380' FWL Section 12. T24S. R34E
C102 attached.

DRILLING
New landing target TVD for EOC is 9,605ft TVD.
New landing target TVD for EOL is 9,311ft TVD.
New well plan gives us new well TD of 16,664.9ft MD.

Well has been producing since 03/08/2017

14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #359112 verified by the BLM Well Information System For COG OPERATING LLC, sent to the Hobbs Committed to AFMSS for processing by MUSTAFA HAQUE on 12/01/2016 ()	
Name (Printed/Typed) MAYTE X REYES	Title REGULATORY ANALYST
Signature (Electronic Submission)	Date 11/29/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____
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 _____
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.

(Instructions on page 2)

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

ACCEPTED FOR RECORD

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Additional data for EC transaction #359112 that would not fit on the form

32. Additional remarks, continued

Directional plan attached.



COG Operating, LLC

Lea County, NM

Sec 13, T24-S, R34-E

Sombrero Federal Com 4H

Wellbore #1

Plan: Design #1

QES Well Planning Report

28 November, 2016



Database:	EDM5002	Local Co-ordinate Reference:	Well Sombrero Federal Com 4H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3503.5usft (Noram #21)
Project:	Lea County, NM	MD Reference:	Well @ 3503.5usft (Noram #21)
Site:	Sec 13, T24-S, R34-E	North Reference:	Grid
Well:	Sombrero Federal Com 4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Lea County, NM		
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	Sec 13, T24-S, R34-E		
Site Position:		Northing:	441,802.50 usft
From:	Map	Easting:	779,235.60 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 12' 41.070 N
		Longitude:	103° 25' 49.787 W
		Grid Convergence:	0.48 °

Well	Sombrero Federal Com 4H		
Well Position	+N/-S	0.0 usft	Northing: 441,802.50 usft
	+E/-W	0.0 usft	Easting: 779,235.60 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 12' 41.070 N
		Longitude:	103° 25' 49.787 W
		Ground Level:	3,474.5 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	11/28/2016	6.95
			Dip Angle (°)
			60.08
			Field Strength (nT)
			48,002

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)
	0.0	0.0	0.0
			Direction (°)
			359.51

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	
9,128.0	0.00	0.00	9,128.0	0.0	0.0	0.00	0.00	0.00	0.00	
9,898.8	92.49	359.51	9,605.0	498.2	-4.2	12.00	12.00	-0.06	359.51	
16,664.9	92.49	359.51	9,311.0	7,257.7	-61.6	0.00	0.00	0.00	0.00	PBHL - Sombrero Fec

Database: EDM5002
Company: COG Operating, LLC
Project: Lea County, NM
Site: Sec 13, T24-S, R34-E
Well: Sombbrero Federal Com 4H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Sombbrero Federal Com 4H
TVD Reference: Well @ 3503.5usft (Noram #21)
MD Reference: Well @ 3503.5usft (Noram #21)
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
Rustler									
1,210.0	0.00	0.00	1,210.0	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
TOS									
1,538.0	0.00	0.00	1,538.0	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

Database:	EDM5002	Local Co-ordinate Reference:	Well Sombrero Federal Com 4H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3503.5usft (Noram #21)
Project:	Lea County, NM	MD Reference:	Well @ 3503.5usft (Noram #21)
Site:	Sec 13, T24-S, R34-E	North Reference:	Grid
Well:	Sombrero Federal Com 4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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)
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
BOS (Fletcher)									
5,339.0	0.00	0.00	5,339.0	0.0	0.0	0.0	0.00	0.00	0.00
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
LMAR (Top Delaware)									
5,623.0	0.00	0.00	5,623.0	0.0	0.0	0.0	0.00	0.00	0.00
BLCN									
5,676.0	0.00	0.00	5,676.0	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
CYCN									
6,562.0	0.00	0.00	6,562.0	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
BYCN									
8,003.0	0.00	0.00	8,003.0	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
Build 12° / 100'									

Database:	EDM5002	Local Co-ordinate Reference:	Well Sombrero Federal Com 4H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3503.5usft (Noram #21)
Project:	Lea County, NM	MD Reference:	Well @ 3503.5usft (Noram #21)
Site:	Sec 13, T24-S, R34-E	North Reference:	Grid
Well:	Sombrero Federal Com 4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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)
9,128.0	0.00	0.00	9,128.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	8.64	359.51	9,199.7	5.4	0.0	5.4	12.00	12.00	0.00
9,300.0	20.64	359.51	9,296.3	30.6	-0.3	30.6	12.00	12.00	0.00
Bone Sprg (BSGL)									
9,353.0	27.00	359.51	9,344.7	52.0	-0.4	52.0	12.00	12.00	0.00
U Avalon SH									
9,395.6	32.11	359.51	9,381.8	73.1	-0.6	73.1	12.00	12.00	0.00
9,400.0	32.64	359.51	9,385.5	75.4	-0.6	75.4	12.00	12.00	0.00
9,500.0	44.64	359.51	9,463.5	137.7	-1.2	137.7	12.00	12.00	0.00
9,600.0	56.64	359.51	9,526.8	214.9	-1.8	214.9	12.00	12.00	0.00
9,700.0	68.64	359.51	9,572.7	303.5	-2.6	303.6	12.00	12.00	0.00
9,800.0	80.64	359.51	9,599.1	399.8	-3.4	399.8	12.00	12.00	0.00
EOB @ 92.49° Inc / 359.51° Azm									
9,898.8	92.49	359.51	9,605.0	498.2	-4.2	498.2	12.00	12.00	0.00
9,900.0	92.49	359.51	9,605.0	499.4	-4.2	499.5	0.00	0.00	0.00
10,000.0	92.49	359.51	9,600.6	599.3	-5.1	599.4	0.00	0.00	0.00
10,100.0	92.49	359.51	9,596.3	699.2	-5.9	699.3	0.00	0.00	0.00
10,200.0	92.49	359.51	9,591.9	799.1	-6.8	799.2	0.00	0.00	0.00
10,300.0	92.49	359.51	9,587.6	899.0	-7.6	899.1	0.00	0.00	0.00
10,400.0	92.49	359.51	9,583.2	998.9	-8.5	999.0	0.00	0.00	0.00
10,500.0	92.49	359.51	9,578.9	1,098.9	-9.3	1,098.9	0.00	0.00	0.00
10,600.0	92.49	359.51	9,574.5	1,198.8	-10.2	1,198.8	0.00	0.00	0.00
10,700.0	92.49	359.51	9,570.2	1,298.7	-11.0	1,298.7	0.00	0.00	0.00
10,800.0	92.49	359.51	9,565.9	1,398.6	-11.9	1,398.6	0.00	0.00	0.00
10,900.0	92.49	359.51	9,561.5	1,498.5	-12.7	1,498.5	0.00	0.00	0.00
11,000.0	92.49	359.51	9,557.2	1,598.4	-13.6	1,598.4	0.00	0.00	0.00
11,100.0	92.49	359.51	9,552.8	1,698.3	-14.4	1,698.3	0.00	0.00	0.00
11,200.0	92.49	359.51	9,548.5	1,798.2	-15.3	1,798.2	0.00	0.00	0.00
11,300.0	92.49	359.51	9,544.1	1,898.1	-16.1	1,898.1	0.00	0.00	0.00
11,400.0	92.49	359.51	9,539.8	1,998.0	-17.0	1,998.0	0.00	0.00	0.00
11,500.0	92.49	359.51	9,535.4	2,097.9	-17.8	2,097.9	0.00	0.00	0.00
11,600.0	92.49	359.51	9,531.1	2,197.8	-18.7	2,197.9	0.00	0.00	0.00
11,700.0	92.49	359.51	9,526.7	2,297.7	-19.5	2,297.8	0.00	0.00	0.00
11,800.0	92.49	359.51	9,522.4	2,397.6	-20.3	2,397.7	0.00	0.00	0.00
11,900.0	92.49	359.51	9,518.1	2,497.5	-21.2	2,497.6	0.00	0.00	0.00
12,000.0	92.49	359.51	9,513.7	2,597.4	-22.0	2,597.5	0.00	0.00	0.00
12,100.0	92.49	359.51	9,509.4	2,697.3	-22.9	2,697.4	0.00	0.00	0.00
12,200.0	92.49	359.51	9,505.0	2,797.2	-23.7	2,797.3	0.00	0.00	0.00
12,300.0	92.49	359.51	9,500.7	2,897.1	-24.6	2,897.2	0.00	0.00	0.00
12,400.0	92.49	359.51	9,496.3	2,997.0	-25.4	2,997.1	0.00	0.00	0.00
12,500.0	92.49	359.51	9,492.0	3,096.9	-26.3	3,097.0	0.00	0.00	0.00
12,600.0	92.49	359.51	9,487.6	3,196.8	-27.1	3,196.9	0.00	0.00	0.00
12,700.0	92.49	359.51	9,483.3	3,296.7	-28.0	3,296.8	0.00	0.00	0.00
12,800.0	92.49	359.51	9,478.9	3,396.6	-28.8	3,396.7	0.00	0.00	0.00
12,900.0	92.49	359.51	9,474.6	3,496.5	-29.7	3,496.6	0.00	0.00	0.00
13,000.0	92.49	359.51	9,470.3	3,596.4	-30.5	3,596.5	0.00	0.00	0.00
13,100.0	92.49	359.51	9,465.9	3,696.3	-31.4	3,696.4	0.00	0.00	0.00
13,200.0	92.49	359.51	9,461.6	3,796.2	-32.2	3,796.3	0.00	0.00	0.00
13,300.0	92.49	359.51	9,457.2	3,896.1	-33.1	3,896.2	0.00	0.00	0.00
13,400.0	92.49	359.51	9,452.9	3,996.0	-33.9	3,996.2	0.00	0.00	0.00
13,500.0	92.49	359.51	9,448.5	4,095.9	-34.8	4,096.1	0.00	0.00	0.00
13,600.0	92.49	359.51	9,444.2	4,195.8	-35.6	4,196.0	0.00	0.00	0.00
13,700.0	92.49	359.51	9,439.8	4,295.7	-36.5	4,295.9	0.00	0.00	0.00

Database:	EDM5002	Local Co-ordinate Reference:	Well Sombrero Federal Com 4H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3503.5usft (Noram #21)
Project:	Lea County, NM	MD Reference:	Well @ 3503.5usft (Noram #21)
Site:	Sec 13, T24-S, R34-E	North Reference:	Grid
Well:	Sombrero Federal Com 4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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)
13,800.0	92.49	359.51	9,435.5	4,395.6	-37.3	4,395.8	0.00	0.00	0.00
13,900.0	92.49	359.51	9,431.1	4,495.5	-38.2	4,495.7	0.00	0.00	0.00
14,000.0	92.49	359.51	9,426.8	4,595.4	-39.0	4,595.6	0.00	0.00	0.00
14,100.0	92.49	359.51	9,422.5	4,695.3	-39.9	4,695.5	0.00	0.00	0.00
14,200.0	92.49	359.51	9,418.1	4,795.2	-40.7	4,795.4	0.00	0.00	0.00
14,300.0	92.49	359.51	9,413.8	4,895.1	-41.5	4,895.3	0.00	0.00	0.00
14,400.0	92.49	359.51	9,409.4	4,995.0	-42.4	4,995.2	0.00	0.00	0.00
14,500.0	92.49	359.51	9,405.1	5,094.9	-43.2	5,095.1	0.00	0.00	0.00
14,600.0	92.49	359.51	9,400.7	5,194.8	-44.1	5,195.0	0.00	0.00	0.00
14,700.0	92.49	359.51	9,396.4	5,294.7	-44.9	5,294.9	0.00	0.00	0.00
14,800.0	92.49	359.51	9,392.0	5,394.6	-45.8	5,394.8	0.00	0.00	0.00
14,900.0	92.49	359.51	9,387.7	5,494.5	-46.6	5,494.7	0.00	0.00	0.00
15,000.0	92.49	359.51	9,383.3	5,594.4	-47.5	5,594.6	0.00	0.00	0.00
15,100.0	92.49	359.51	9,379.0	5,694.3	-48.3	5,694.5	0.00	0.00	0.00
15,200.0	92.49	359.51	9,374.7	5,794.2	-49.2	5,794.5	0.00	0.00	0.00
15,300.0	92.49	359.51	9,370.3	5,894.1	-50.0	5,894.4	0.00	0.00	0.00
15,400.0	92.49	359.51	9,366.0	5,994.0	-50.9	5,994.3	0.00	0.00	0.00
15,500.0	92.49	359.51	9,361.6	6,093.9	-51.7	6,094.2	0.00	0.00	0.00
15,600.0	92.49	359.51	9,357.3	6,193.8	-52.6	6,194.1	0.00	0.00	0.00
15,700.0	92.49	359.51	9,352.9	6,293.8	-53.4	6,294.0	0.00	0.00	0.00
15,800.0	92.49	359.51	9,348.6	6,393.7	-54.3	6,393.9	0.00	0.00	0.00
15,900.0	92.49	359.51	9,344.2	6,493.6	-55.1	6,493.8	0.00	0.00	0.00
16,000.0	92.49	359.51	9,339.9	6,593.5	-56.0	6,593.7	0.00	0.00	0.00
16,100.0	92.49	359.51	9,335.5	6,693.4	-56.8	6,693.6	0.00	0.00	0.00
16,200.0	92.49	359.51	9,331.2	6,793.3	-57.7	6,793.5	0.00	0.00	0.00
16,300.0	92.49	359.51	9,326.9	6,893.2	-58.5	6,893.4	0.00	0.00	0.00
16,400.0	92.49	359.51	9,322.5	6,993.1	-59.4	6,993.3	0.00	0.00	0.00
16,500.0	92.49	359.51	9,318.2	7,093.0	-60.2	7,093.2	0.00	0.00	0.00
16,600.0	92.49	359.51	9,313.8	7,192.9	-61.0	7,193.1	0.00	0.00	0.00
TD @ 16665' MD / 9311' TVD									
16,664.9	92.49	359.51	9,311.0	7,257.7	-61.6	7,258.0	0.00	0.00	0.00

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 - Sombrero Feder - plan hits target center - Point	0.00	0.00	9,311.0	7,257.7	-61.6	449,060.20	779,174.00	32° 13' 52.891 N	103° 25' 49.795 W

Database:	EDM5002	Local Co-ordinate Reference:	Well Sombrero Federal Com 4H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3503.5usft (Noram #21)
Project:	Lea County, NM	MD Reference:	Well @ 3503.5usft (Noram #21)
Site:	Sec 13, T24-S, R34-E	North Reference:	Grid
Well:	Sombrero Federal Com 4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,210.0	1,210.0	Rustler		-2.49	359.51	
1,538.0	1,538.0	TOS		-2.49	359.51	
5,339.0	5,339.0	BOS (Fletcher)		-2.49	359.51	
5,623.0	5,623.0	LMAR (Top Delaware)		-2.49	359.51	
5,676.0	5,676.0	BLCN		-2.49	359.51	
6,562.0	6,562.0	CYCN		-2.49	359.51	
8,003.0	8,003.0	BYCN		-2.49	359.51	
9,353.0	9,344.7	Bone Sprg (BSGL)		-2.49	359.51	
9,395.6	9,381.8	U Avalon SH		-2.49	359.51	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
9,128.0	9,128.0	0.0	0.0	Build 12° / 100'	
9,898.8	9,605.0	498.2	-4.2	EOB @ 92.49° Inc / 359.51° Azm	
16,664.9	9,311.0	7,257.7	-61.6	TD @ 16665' MD / 9311' TVD	

Company Name: COG Operating, LLC
Sombbrero Federal Com 4H
Lea County, NM
Rig: Noram #21
Created By: Kris Ray
Date: 11/28/2016

Sombbrero Federal Com 4H
Lea County, NM
Q160*** & WT-160***
Design #1

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
LTP - Sombbrero Federal Com 4H	0.0	7127.6	-60.7	448936.13	779174.94	32° 13' 51.664 N	103° 25' 49.796 W
PBHL - Sombbrero Federal Com 4H - plan hits target center	9311.0	7257.7	-61.6	449960.20	779174.90	32° 13' 52.891 N	103° 25' 49.795 W

WELL DETAILS: Sombbrero Federal Com 4H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
9.9	9.9	441892.58	779235.98	32° 12' 41.076 N	103° 27' 40.787 W

PROJECT DETAILS: Lea County, NM

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



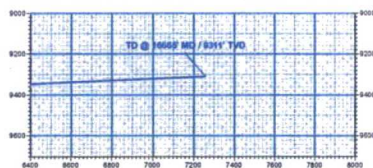
Azimuths to Grid North

Correction: 6.47°

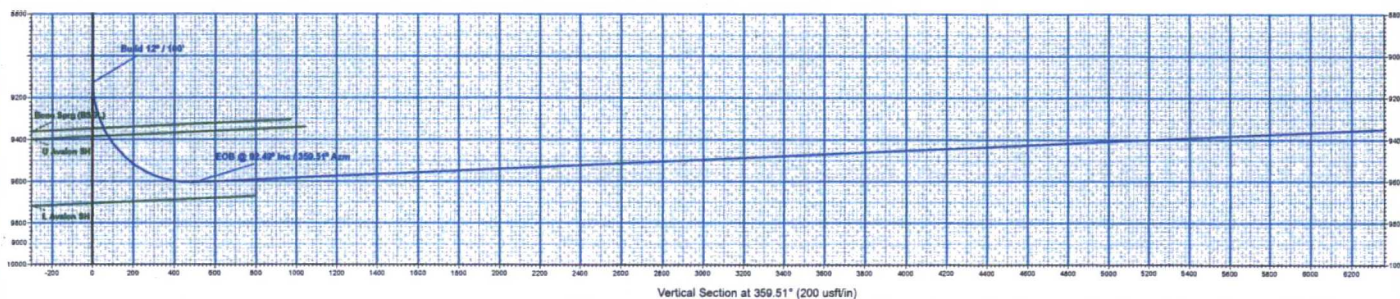
Magnetic Field
Strength: 48001.8snT
Dip Angle: 60.08°
Date: 11/28/2016
Model: IGRF2015

ANNOTATIONS

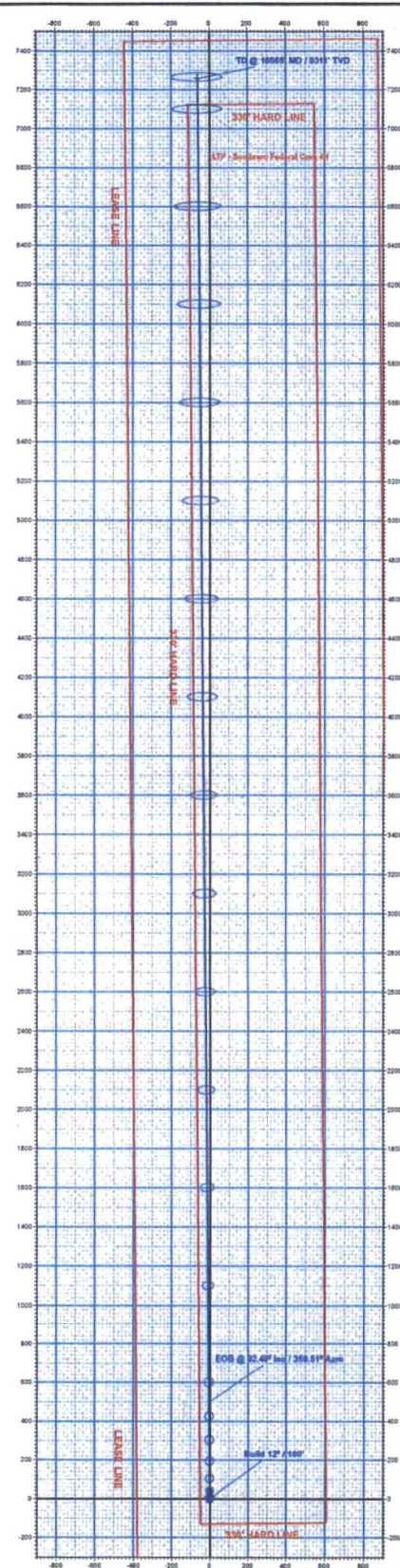
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSecDeparture	Annotation
9128.0	0.00	0.00	9128.0	0.0	0.0	0.0	Build 12° / 100'
9898.8	92.49	359.51	9605.0	498.2	-4.2	498.2	EOB @ 92.49° Inc / 359.51° Azm
16664.9	92.49	359.51	9311.0	7257.7	-61.6	7258.0	TD @ 16665' MD / 9311' TVD



Vertical Section at 359.51° (200 usf/in)



Vertical Section at 359.51° (200 usf/in)



DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
Phone: (505) 283-9181 Fax: (505) 283-9720

DISTRICT II
611 S. FIRST ST., ARTESIA, NM 88210
Phone: (505) 748-1283 Fax: (505) 748-9720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-8176 Fax: (505) 334-8170

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 478-3460 Fax: (505) 478-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-025-	Pool Code 96434	Pool Name Red Hills; Bone Spring, North
Property Code	Property Name SOMBRERO FEDERAL COM	Well Number 4H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3474.5'

Surface Location

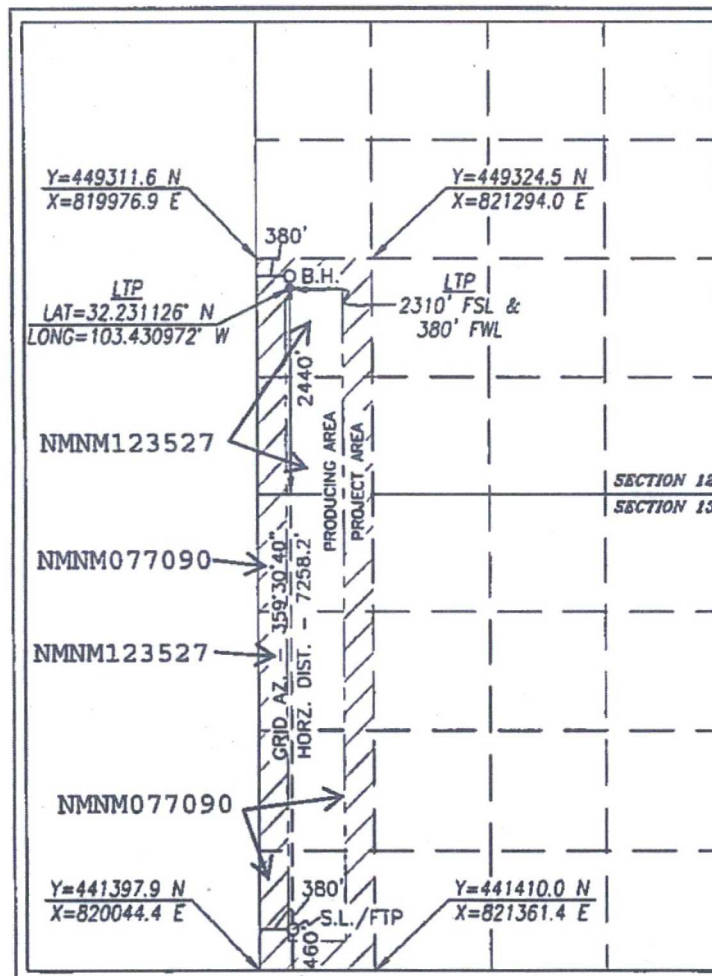
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	13	24-S	34-E		460	SOUTH	380	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	24-S	34-E		2440	SOUTH	380	WEST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
240			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

	NAD 83 NME PROPOSED BOTTOM HOLE LOCATION Y=449119.3 N X=820358.7 E LAT.=32.231484° N LONG.=103.430972° W NAD 83 NME SURFACE LOCATION & F.T.P. Y=441861.3 N X=820420.6 E LAT.=32.211533° N LONG.=103.430969° W	OPERATOR CERTIFICATION I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Mayte Reyes</i> 11-29-16 Signature Date Mayte Reyes Printed Name mreyes1@concho.com E-mail Address SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. DECEMBER 30, 2014 Date of Survey Signature & Seal of Professional Surveyor  Certificate No. CHAD HARCROW 17777 W.O. 15-868 DRAWN BY: SP
--	---	--