

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires January 31, 2018

HOBBS OCD

SUNDRY NOTICES AND REPORTS ON WELLS

Carlsbad Field Office
OCD Hobbs

DEC 1 2016

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		7. If Unit or CA/Agreement, Name and/or No. MAS FEDERAL 4H
2. Name of Operator COG OPERATING LLC		9. API Well No. 30-025-43482-00-S1
3a. Address ONE CONCHO CENTER 600 W ILLINOIS AVENUE MIDLAND, TX 79701-4287		10. Field and Pool or Exploratory Area WILDCAT;WOLFCAMP
3b. Phone No. (include area code) Ph: 575-748-6945		11. County or Parish, State LEA COUNTY, NM
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 34 T20S R34E NENW 190FNL 2440FWL 32.536323 N Lat, 103.548749 W Lon		

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.

Formation
From: Berry, Bone Spring, North
To: Wildcat; Wolfcamp (Oil)
C102 Attached

FTP: 330' FNL & 1980' FWL
LTP: 330' FSL & 1980' FWL

- All previous CoAs still apply. Additional CoA is not required

Drilling

Operator will drill to 16,093? MD per attached plan.
New plan is 36? into Wolfcamp. Operator does not expect abnormal pressures at this depth. Offset
Mas Federal 3H was TD?d with 9.2 ppg MW. Maximum anticipated MW in wolfcamp is 9.6 ppg.

14. I hereby certify that the foregoing is true and correct. Electronic Submission #360309 verified by the BLM Well Information System For COG OPERATING LLC, sent to the Hobbs Committed to AFMSS for processing by MUSTAFA HAQUE on 12/09/2016 (17MH0011SE)	
Name (Printed/Typed) MAYTE X REYES	Title REGULATORY ANALYST
Signature (Electronic Submission)	Date 12/08/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By MUSTAFA HAQUE	Title PETROLEUM ENGINEER	Date 12/09/2016
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 Hobbs		

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)

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

K

Additional data for EC transaction #360309 that would not fit on the form

32. Additional remarks, continued

Max BHP: 5685 psi



COG Operating L L C
 Project: Lea County, NM (NAD27 NME)
 Site: Sec. 34, T 20 S., R 34 E
 Well: Mas Federal #4H
 Wellbore: Wellbore #1
 Plan: Plan#2 (Mas Federal #4H/Wellbore #1)
 Patriot 2



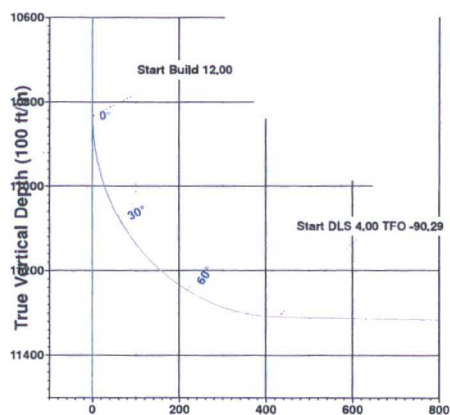
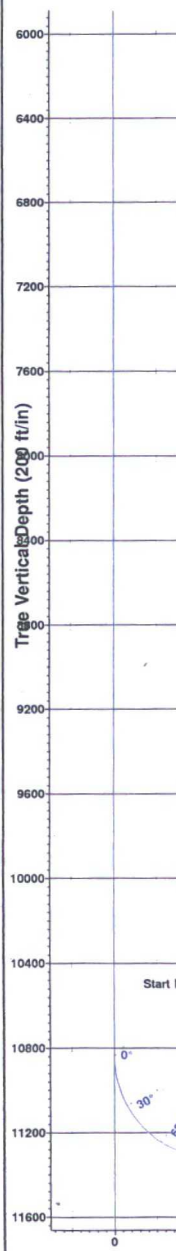
WELL DETAILS: Mas Federal #4H

Ground Elevation:: 3719.50
 RKB Elevation: KB=20' @ 3739.50ft (Patriot 2)
 Rig Name: Patriot 2

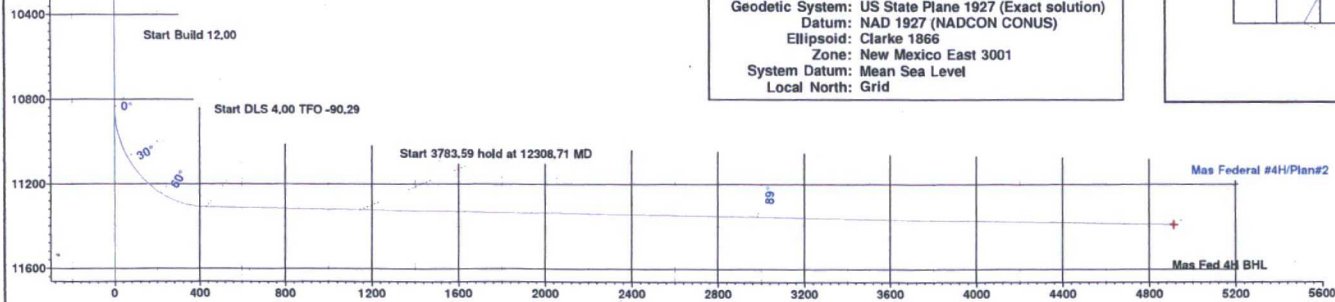
Northing	Easting	Latitude	Longitude
559673.4000	741944.6000	32° 32' 10.320 N	103° 32' 53.739 W

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	10832.61	0.00	0.00	10832.61	0.00	0.00	0.00	0.00	0.00
3	11574.28	89.00	209.40	11310.00	-408.72	-230.30	12.00	209.40	426.75
4	12308.71	88.99	180.02	11323.19	-1111.21	-414.71	4.00	-90.29	1142.34
5	16092.30	88.99	180.02	11390.00	-4894.21	-415.90	0.00	0.00	4911.85



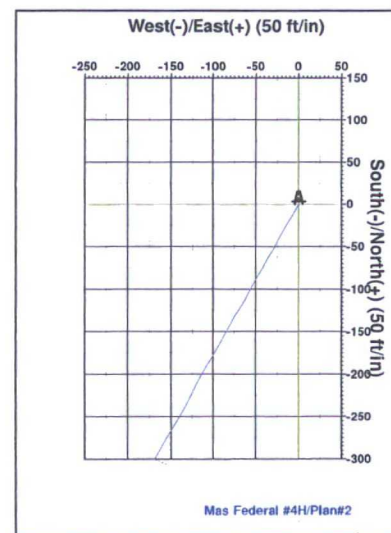
Vertical Section at 184.86° (100 ft/in)



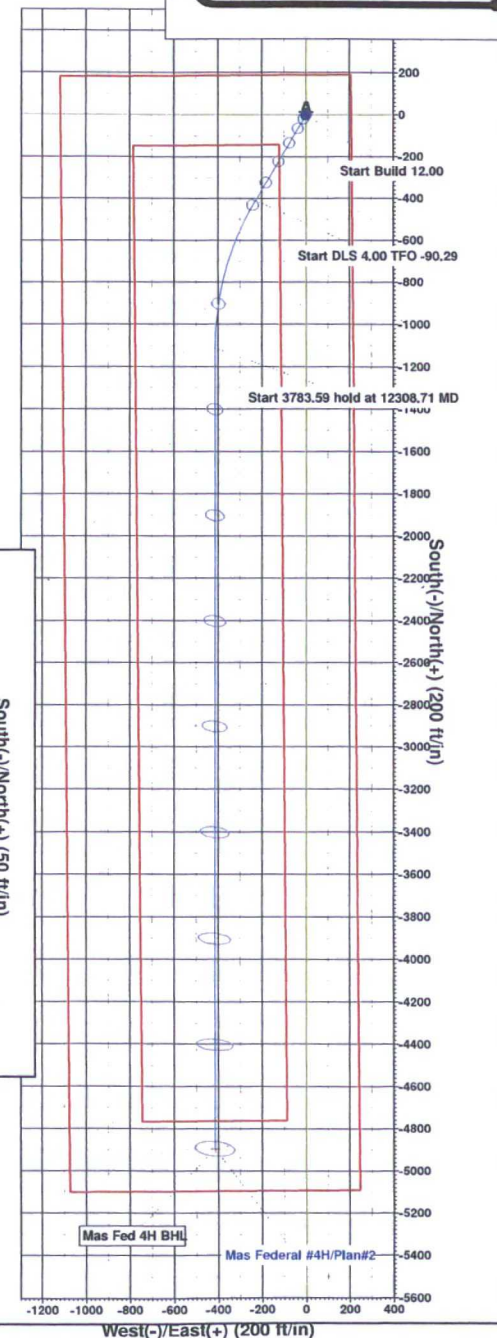
Vertical Section at 184.86° (200 ft/in)



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



Mas Federal #4H/Plan#2





COG Operating L L C

Lea County, NM (NAD27 NME)

Sec. 34, T 20 S. , R 34 E

Mas Federal #4H

Wellbore #1

Plan: Plan#2

Standard Survey Report

05 December, 2016





Integrity Directional Services, LLC

Survey Report



Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 34, T 20 S. , R 34 E
Well: Mas Federal #4H
Wellbore: Wellbore #1
Design: Plan#2

Local Co-ordinate Reference: Well Mas Federal #4H
TVD Reference: KB=20' @ 3739.50ft (Patriot 2)
MD Reference: KB=20' @ 3739.50ft (Patriot 2)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

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 Sec. 34, T 20 S. , R 34 E

Site Position: **From:** Map **Northing:** 559,673.4000 usft **Latitude:** 32° 32' 10.320 N
Eastng: 741,944.6000 usft **Longitude:** 103° 32' 53.739 W
Position Uncertainty: 0.00 ft **Slot Radius:** 13-3/16 " **Grid Convergence:** 0.42 °

Well Mas Federal #4H

Well Position **+N/-S** 0.00 ft **Northing:** 559,673.4000 usft **Latitude:** 32° 32' 10.320 N
+E/-W 0.00 ft **Eastng:** 741,944.6000 usft **Longitude:** 103° 32' 53.739 W
Position Uncertainty 0.00 ft **Wellhead Elevation:** 0.00 ft **Ground Level:** 3,719.50 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/23/2016	7.03	60.36	48,182

Design Plan#2

Audit Notes:

Version: **Phase:** PLAN **Tie On Depth:** 0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	184.86

Survey Tool Program Date 12/5/2016

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	16,091.69	Plan#2 (Wellbore #1)	MWD	MWD - Standard

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00



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1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00



Integrity Directional Services, LLC

Survey Report



Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 34, T 20 S. , R 34 E
Well: Mas Federal #4H
Wellbore: Wellbore #1
Design: Plan#2

Local Co-ordinate Reference: Well Mas Federal #4H
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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00
8,800.00	0.00	0.00	8,800.00	0.00	0.00	0.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,900.00	0.00	0.00	0.00	0.00	0.00	0.00
9,000.00	0.00	0.00	9,000.00	0.00	0.00	0.00	0.00	0.00	0.00
9,100.00	0.00	0.00	9,100.00	0.00	0.00	0.00	0.00	0.00	0.00
9,200.00	0.00	0.00	9,200.00	0.00	0.00	0.00	0.00	0.00	0.00
9,300.00	0.00	0.00	9,300.00	0.00	0.00	0.00	0.00	0.00	0.00
9,400.00	0.00	0.00	9,400.00	0.00	0.00	0.00	0.00	0.00	0.00
9,500.00	0.00	0.00	9,500.00	0.00	0.00	0.00	0.00	0.00	0.00
9,600.00	0.00	0.00	9,600.00	0.00	0.00	0.00	0.00	0.00	0.00



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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,700.00	0.00	0.00	9,700.00	0.00	0.00	0.00	0.00	0.00	0.00
9,800.00	0.00	0.00	9,800.00	0.00	0.00	0.00	0.00	0.00	0.00
9,900.00	0.00	0.00	9,900.00	0.00	0.00	0.00	0.00	0.00	0.00
10,000.00	0.00	0.00	10,000.00	0.00	0.00	0.00	0.00	0.00	0.00
10,100.00	0.00	0.00	10,100.00	0.00	0.00	0.00	0.00	0.00	0.00
10,200.00	0.00	0.00	10,200.00	0.00	0.00	0.00	0.00	0.00	0.00
10,300.00	0.00	0.00	10,300.00	0.00	0.00	0.00	0.00	0.00	0.00
10,400.00	0.00	0.00	10,400.00	0.00	0.00	0.00	0.00	0.00	0.00
10,500.00	0.00	0.00	10,500.00	0.00	0.00	0.00	0.00	0.00	0.00
10,600.00	0.00	0.00	10,600.00	0.00	0.00	0.00	0.00	0.00	0.00
10,700.00	0.00	0.00	10,700.00	0.00	0.00	0.00	0.00	0.00	0.00
10,800.00	0.00	0.00	10,800.00	0.00	0.00	0.00	0.00	0.00	0.00
10,832.61	0.00	0.00	10,832.61	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 12.00									
10,900.00	8.09	209.40	10,899.78	-4.14	-2.33	4.32	12.00	12.00	0.00
11,000.00	20.09	209.40	10,996.59	-25.30	-14.26	26.42	12.00	12.00	0.00
11,100.00	32.09	209.40	11,086.24	-63.54	-35.80	66.35	12.00	12.00	0.00
11,200.00	44.09	209.40	11,164.81	-117.19	-66.03	122.36	12.00	12.00	0.00
11,300.00	56.09	209.40	11,228.85	-183.89	-103.61	192.00	12.00	12.00	0.00
11,400.00	68.09	209.40	11,275.58	-260.73	-146.91	272.23	12.00	12.00	0.00
11,500.00	80.09	209.40	11,302.95	-344.36	-194.04	359.55	12.00	12.00	0.00
11,574.28	89.00	209.40	11,310.00	-408.72	-230.30	426.75	12.00	12.00	0.00
Start DLS 4.00 TFO -90.29									
11,600.00	89.00	208.37	11,310.45	-431.23	-242.72	450.24	4.00	-0.02	-4.00
11,700.00	88.98	204.37	11,312.22	-520.79	-287.12	543.24	4.00	-0.02	-4.00
11,800.00	88.97	200.37	11,314.02	-613.24	-325.17	638.57	4.00	-0.01	-4.00
11,900.00	88.96	196.37	11,315.82	-708.11	-356.67	735.76	4.00	-0.01	-4.00
12,000.00	88.96	192.37	11,317.64	-804.94	-381.48	834.35	4.00	0.00	-4.00
12,100.00	88.96	188.37	11,319.45	-903.27	-399.47	933.85	4.00	0.00	-4.00
12,200.00	88.97	184.37	11,321.25	-1,002.62	-410.56	1,033.78	4.00	0.01	-4.00
12,300.00	88.99	180.37	11,323.03	-1,102.50	-414.68	1,133.65	4.00	0.01	-4.00
12,308.71	88.99	180.02	11,323.19	-1,111.21	-414.71	1,142.34	4.00	0.02	-4.00
Start 3783.59 hold at 12308.71 MD									
12,400.00	88.99	180.02	11,324.80	-1,202.48	-414.74	1,233.28	0.00	0.00	0.00
12,500.00	88.99	180.02	11,326.56	-1,302.47	-414.77	1,332.91	0.00	0.00	0.00
12,600.00	88.99	180.02	11,328.33	-1,402.45	-414.80	1,432.54	0.00	0.00	0.00
12,700.00	88.99	180.02	11,330.10	-1,502.44	-414.84	1,532.17	0.00	0.00	0.00
12,800.00	88.99	180.02	11,331.86	-1,602.42	-414.87	1,631.79	0.00	0.00	0.00
12,900.00	88.99	180.02	11,333.63	-1,702.40	-414.90	1,731.42	0.00	0.00	0.00
13,000.00	88.99	180.02	11,335.39	-1,802.39	-414.93	1,831.05	0.00	0.00	0.00
13,100.00	88.99	180.02	11,337.16	-1,902.37	-414.96	1,930.68	0.00	0.00	0.00
13,200.00	88.99	180.02	11,338.93	-2,002.36	-414.99	2,030.31	0.00	0.00	0.00
13,300.00	88.99	180.02	11,340.69	-2,102.34	-415.02	2,129.93	0.00	0.00	0.00
13,400.00	88.99	180.02	11,342.46	-2,202.33	-415.06	2,229.56	0.00	0.00	0.00



Integrity Directional Services, LLC

Survey Report



Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 34, T 20 S., R 34 E
Well: Mas Federal #4H
Wellbore: Wellbore #1
Design: Plan#2

Local Co-ordinate Reference: Well Mas Federal #4H
TVD Reference: KB=20' @ 3739.50ft (Patriot 2)
MD Reference: KB=20' @ 3739.50ft (Patriot 2)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,500.00	88.99	180.02	11,344.22	-2,302.31	-415.09	2,329.19	0.00	0.00	0.00
13,600.00	88.99	180.02	11,345.99	-2,402.29	-415.12	2,428.82	0.00	0.00	0.00
13,700.00	88.99	180.02	11,347.75	-2,502.28	-415.15	2,528.45	0.00	0.00	0.00
13,800.00	88.99	180.02	11,349.52	-2,602.26	-415.18	2,628.07	0.00	0.00	0.00
13,900.00	88.99	180.02	11,351.29	-2,702.25	-415.21	2,727.70	0.00	0.00	0.00
14,000.00	88.99	180.02	11,353.05	-2,802.23	-415.24	2,827.33	0.00	0.00	0.00
14,100.00	88.99	180.02	11,354.82	-2,902.22	-415.28	2,926.96	0.00	0.00	0.00
14,200.00	88.99	180.02	11,356.58	-3,002.20	-415.31	3,026.59	0.00	0.00	0.00
14,300.00	88.99	180.02	11,358.35	-3,102.19	-415.34	3,126.21	0.00	0.00	0.00
14,400.00	88.99	180.02	11,360.12	-3,202.17	-415.37	3,225.84	0.00	0.00	0.00
14,500.00	88.99	180.02	11,361.88	-3,302.15	-415.40	3,325.47	0.00	0.00	0.00
14,600.00	88.99	180.02	11,363.65	-3,402.14	-415.43	3,425.10	0.00	0.00	0.00
14,700.00	88.99	180.02	11,365.41	-3,502.12	-415.46	3,524.73	0.00	0.00	0.00
14,800.00	88.99	180.02	11,367.18	-3,602.11	-415.50	3,624.35	0.00	0.00	0.00
14,900.00	88.99	180.02	11,368.94	-3,702.09	-415.53	3,723.98	0.00	0.00	0.00
15,000.00	88.99	180.02	11,370.71	-3,802.08	-415.56	3,823.61	0.00	0.00	0.00
15,100.00	88.99	180.02	11,372.48	-3,902.06	-415.59	3,923.24	0.00	0.00	0.00
15,200.00	88.99	180.02	11,374.24	-4,002.05	-415.62	4,022.87	0.00	0.00	0.00
15,300.00	88.99	180.02	11,376.01	-4,102.03	-415.65	4,122.49	0.00	0.00	0.00
15,400.00	88.99	180.02	11,377.77	-4,202.01	-415.68	4,222.12	0.00	0.00	0.00
15,500.00	88.99	180.02	11,379.54	-4,302.00	-415.71	4,321.75	0.00	0.00	0.00
15,600.00	88.99	180.02	11,381.31	-4,401.98	-415.75	4,421.38	0.00	0.00	0.00
15,700.00	88.99	180.02	11,383.07	-4,501.97	-415.78	4,521.01	0.00	0.00	0.00
15,800.00	88.99	180.02	11,384.84	-4,601.95	-415.81	4,620.63	0.00	0.00	0.00
15,900.00	88.99	180.02	11,386.60	-4,701.94	-415.84	4,720.26	0.00	0.00	0.00
16,000.00	88.99	180.02	11,388.37	-4,801.92	-415.87	4,819.89	0.00	0.00	0.00
16,092.30	88.99	180.02	11,390.00	-4,894.21	-415.90	4,911.85	0.00	0.00	0.00
TD at 16092.30									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Mas Fed 4H BHL	0.00	0.00	11,390.00	-4,894.21	-415.90	554,779.2000	741,528.7000	32° 31' 21.923 N	103° 32' 59.018 W
- plan hits target center									
- Point									



Integrity Directional Services, LLC

Survey Report



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,833	10,833	0	0	Start Build 12.00
11,574	11,310	-409	-230	Start DLS 4.00 TFO -90.29
12,309	11,323	-1111	-415	Start 3783.59 hold at 12308.71 MD
16,092	11,390	-4894	-416	TD at 16092.30

Checked By: _____ Approved By: _____ Date: _____