

Sec 28, T24S, R35E
 Coonskin Fee #28H
 Q180*** & WT-180***
 Design #2

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



Company Name: COG Operating, LLC
 Coonskin Fee #28H
 Lea County, NM
 Rig: Noram 21
 Created by: Chase Chambers
 Date: 9:39, August 03 2018

WELL DETAILS: Coonskin Fee #28H

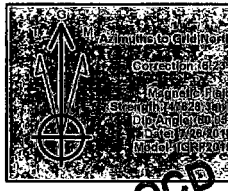
3307.0					
+N/-S	+E/-W	Northing	Eastng	Latitude	Longitude
0.0	0.0	436151.10	795331.10	32° 11' 43.772 N	103° 22' 43.047 W

DESIGN TARGET DETAILS

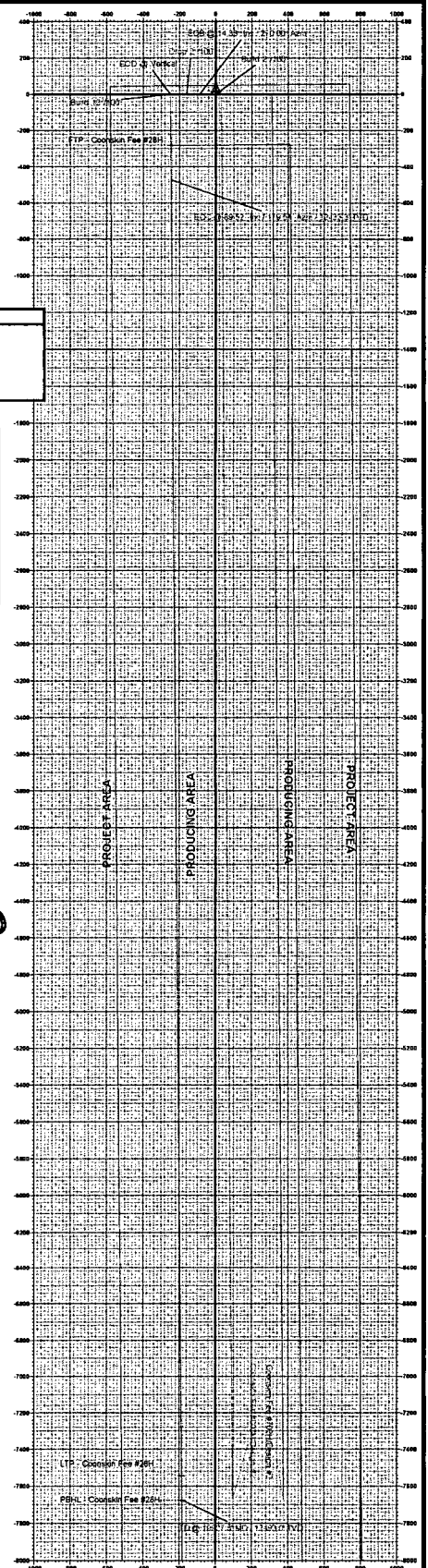
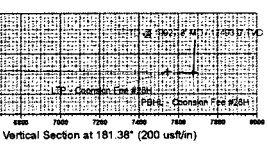
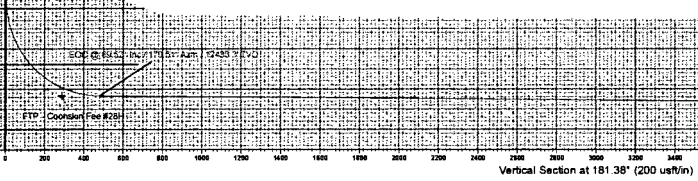
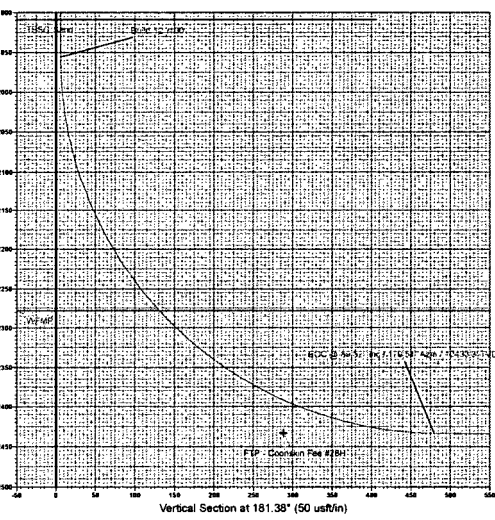
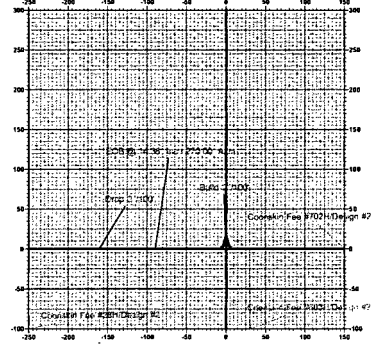
Name	TVD	+N/-S	+E/-W	Northing	Eastng	Latitude	Longitude
FTP - Coonskin Fee #28H	12433.0	-292.2	-247.7	435868.90	795083.40	32° 11' 41.802 N	103° 22' 45.958 W
LTP - Coonskin Fee #28H	12489.9	-764.6	-185.6	428606.60	795145.80	32° 10' 29.135 N	103° 22' 45.984 W
PBHL - Coonskin Fee #28H	12493.0	-7674.9	-184.4	428475.20	795146.70	32° 10' 27.945 N	103° 22' 45.995 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	Vsect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
6000.0	0.00	0.00	6000.0	0.0	0.0	0.00	0.00	0.0	Build 2°/100'
8719.0	14.38	270.00	8711.5	0.0	-85.8	2.00	270.00	2.2	EOB @ 14.38° Inc / 270.00° Azm
8004.0	14.38	270.00	8987.5	0.0	-160.5	0.00	0.00	3.8	Drop 2°/100'
8723.0	0.00	0.00	8989.0	0.0	-280.3	2.00	180.00	6.0	EOB @ Vertical
11979.9	0.00	0.00	11985.9	0.0	-293.3	0.00	0.00	6.0	Build 2°/100'
12725.9	89.53	179.51	12433.3	-473.5	-248.2	12.00	179.51	479.3	EOC @ 89.53° Inc / 179.51° Azm / 12433.3' TVD
19927.8	89.53	179.51	12493.0	-7674.9	-184.4	0.00	0.00	7677.1	TD @ 19927.8' MD / 12493.0' TVD



HOBBS OCD
 AUG 07 2018
 RECEIVED





HOBBS CCD
AUG 07 2018
RECEIVED

COG Operating, LLC

Lea County, NM
Sec 28, T24S, R35E
Coonskin Fee #28H

Wellbore #1

Plan: Design #2

QES Well Planning Report

03 August, 2018





Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Coonskin Fee #28H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3338.0usft (Noram 21)
Project:	Lea County, NM	MD Reference:	Well @ 3338.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #28H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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 28, T24S, R35E				
Site Position:	Northing:	436,006.80 usft	Latitude:	32° 11' 42.192 N	
From: Map	Easting:	797,062.30 usft	Longitude:	103° 22' 22.917 W	
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.51 °

Well	Coonskin Fee #28H					
Well Position	+N-S	144.3 usft	Northing:	436,151.10 usft	Latitude:	32° 11' 43.772 N
	+E-W	-1,731.2 usft	Easting:	795,331.10 usft	Longitude:	103° 22' 43.047 W
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level:	3,307.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/26/2018	6.74	60.05	47,828.28754588

Design	Design #2			
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	181.38

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	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,719.0	14.38	270.00	5,711.5	0.0	-89.8	2.00	2.00	0.00	270.00	
6,004.0	14.38	270.00	5,987.5	0.0	-160.5	0.00	0.00	0.00	0.00	
6,723.0	0.00	0.00	6,699.0	0.0	-250.3	2.00	-2.00	0.00	180.00	
11,979.9	0.00	0.00	11,955.9	0.0	-250.3	0.00	0.00	0.00	0.00	
12,725.9	89.53	179.51	12,433.3	-473.5	-246.2	12.00	12.00	24.06	179.51	
19,927.8	89.53	179.51	12,493.0	-7,674.9	-184.4	0.00	0.00	0.00	0.00	PBHL - Coonskin Fee



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Coonskin Fee #28H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3338.0usft (Noram 21)
Project:	Lea County, NM	MD Reference:	Well @ 3338.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #28H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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
Rustler									
588.0	0.00	0.00	588.0	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
TOS									
947.0	0.00	0.00	947.0	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



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Project:	Lea County, NM	MD Reference:	Well @ 3338.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #28H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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)	
BOS (Fletcher)										
4,866.0	0.00	0.00	4,866.0	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	
Build 2°/100'										
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	2.00	270.00	5,100.0	0.0	-1.7	0.0	2.00	2.00	0.00	
5,200.0	4.00	270.00	5,199.8	0.0	-7.0	0.2	2.00	2.00	0.00	
5,300.0	6.00	270.00	5,299.5	0.0	-15.7	0.4	2.00	2.00	0.00	
LMAR (Top Delaware)										
5,303.6	6.07	270.00	5,303.0	0.0	-16.1	0.4	2.00	2.00	0.00	
BLCN										
5,365.0	7.30	270.00	5,364.0	0.0	-23.2	0.6	2.00	2.00	0.00	
5,400.0	8.00	270.00	5,398.7	0.0	-27.9	0.7	2.00	2.00	0.00	
5,500.0	10.00	270.00	5,497.5	0.0	-43.5	1.0	2.00	2.00	0.00	
5,600.0	12.00	270.00	5,595.6	0.0	-62.6	1.5	2.00	2.00	0.00	
5,700.0	14.00	270.00	5,693.1	0.0	-85.1	2.0	2.00	2.00	0.00	
EOB @ 14.38° Inc / 270.00° Azm										
5,719.0	14.38	270.00	5,711.5	0.0	-89.8	2.2	2.00	2.00	0.00	
5,800.0	14.38	270.00	5,789.9	0.0	-109.9	2.6	0.00	0.00	0.00	
5,900.0	14.38	270.00	5,886.8	0.0	-134.7	3.2	0.00	0.00	0.00	
Drop 2°/100'										
6,004.0	14.38	270.00	5,987.5	0.0	-160.5	3.9	0.00	0.00	0.00	
6,100.0	12.46	270.00	6,080.9	0.0	-182.8	4.4	2.00	-2.00	0.00	
6,200.0	10.46	270.00	6,178.9	0.0	-202.7	4.9	2.00	-2.00	0.00	
6,300.0	8.46	270.00	6,277.6	0.0	-219.1	5.3	2.00	-2.00	0.00	
CYCN										
6,305.5	8.35	270.00	6,283.0	0.0	-219.9	5.3	2.00	-2.00	0.00	
6,400.0	6.46	270.00	6,376.7	0.0	-232.1	5.6	2.00	-2.00	0.00	
6,500.0	4.46	270.00	6,476.2	0.0	-241.6	5.8	2.00	-2.00	0.00	
6,600.0	2.46	270.00	6,576.1	0.0	-247.6	5.9	2.00	-2.00	0.00	
6,700.0	0.46	270.00	6,676.0	0.0	-250.2	6.0	2.00	-2.00	0.00	
EOD @ Vertical										
6,723.0	0.00	0.00	6,699.0	0.0	-250.3	6.0	2.00	-2.00	0.00	
6,800.0	0.00	0.00	6,776.0	0.0	-250.3	6.0	0.00	0.00	0.00	
6,900.0	0.00	0.00	6,876.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,000.0	0.00	0.00	6,976.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,100.0	0.00	0.00	7,076.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,200.0	0.00	0.00	7,176.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,300.0	0.00	0.00	7,276.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,400.0	0.00	0.00	7,376.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,500.0	0.00	0.00	7,476.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,600.0	0.00	0.00	7,576.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,700.0	0.00	0.00	7,676.0	0.0	-250.3	6.0	0.00	0.00	0.00	
BYCN										
7,792.0	0.00	0.00	7,768.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,800.0	0.00	0.00	7,776.0	0.0	-250.3	6.0	0.00	0.00	0.00	
7,900.0	0.00	0.00	7,876.0	0.0	-250.3	6.0	0.00	0.00	0.00	
8,000.0	0.00	0.00	7,976.0	0.0	-250.3	6.0	0.00	0.00	0.00	
8,100.0	0.00	0.00	8,076.0	0.0	-250.3	6.0	0.00	0.00	0.00	
8,200.0	0.00	0.00	8,176.0	0.0	-250.3	6.0	0.00	0.00	0.00	
8,300.0	0.00	0.00	8,276.0	0.0	-250.3	6.0	0.00	0.00	0.00	
8,400.0	0.00	0.00	8,376.0	0.0	-250.3	6.0	0.00	0.00	0.00	
8,500.0	0.00	0.00	8,476.0	0.0	-250.3	6.0	0.00	0.00	0.00	

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Wellbore:	Wellbore #1		
Design:	Design #2		

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)	
8,600.0	0.00	0.00	8,576.0	0.0	-250.3	6.0	0.00	0.00	0.00	
8,700.0	0.00	0.00	8,676.0	0.0	-250.3	6.0	0.00	0.00	0.00	
8,800.0	0.00	0.00	8,776.0	0.0	-250.3	6.0	0.00	0.00	0.00	
8,900.0	0.00	0.00	8,876.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,000.0	0.00	0.00	8,976.0	0.0	-250.3	6.0	0.00	0.00	0.00	
Bone Sprng (BSGL)										
9,082.0	0.00	0.00	9,058.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,100.0	0.00	0.00	9,076.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,200.0	0.00	0.00	9,176.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,300.0	0.00	0.00	9,276.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,400.0	0.00	0.00	9,376.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,500.0	0.00	0.00	9,476.0	0.0	-250.3	6.0	0.00	0.00	0.00	
U Avalon Sh										
9,514.0	0.00	0.00	9,490.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,600.0	0.00	0.00	9,576.0	0.0	-250.3	6.0	0.00	0.00	0.00	
L Avalon Sh										
9,679.0	0.00	0.00	9,655.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,700.0	0.00	0.00	9,676.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,800.0	0.00	0.00	9,776.0	0.0	-250.3	6.0	0.00	0.00	0.00	
9,900.0	0.00	0.00	9,876.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,000.0	0.00	0.00	9,976.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,100.0	0.00	0.00	10,076.0	0.0	-250.3	6.0	0.00	0.00	0.00	
B Avalon Sh										
10,184.0	0.00	0.00	10,160.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,200.0	0.00	0.00	10,176.0	0.0	-250.3	6.0	0.00	0.00	0.00	
FBSG Sand										
10,263.0	0.00	0.00	10,239.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,300.0	0.00	0.00	10,276.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,400.0	0.00	0.00	10,376.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,500.0	0.00	0.00	10,476.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,600.0	0.00	0.00	10,576.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,700.0	0.00	0.00	10,676.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,800.0	0.00	0.00	10,776.0	0.0	-250.3	6.0	0.00	0.00	0.00	
10,900.0	0.00	0.00	10,876.0	0.0	-250.3	6.0	0.00	0.00	0.00	
SBSG Sand										
10,903.0	0.00	0.00	10,879.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,000.0	0.00	0.00	10,976.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,100.0	0.00	0.00	11,076.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,200.0	0.00	0.00	11,176.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,300.0	0.00	0.00	11,276.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,400.0	0.00	0.00	11,376.0	0.0	-250.3	6.0	0.00	0.00	0.00	
SBSG Sand Base										
11,430.0	0.00	0.00	11,406.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,500.0	0.00	0.00	11,476.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,600.0	0.00	0.00	11,576.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,700.0	0.00	0.00	11,676.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,800.0	0.00	0.00	11,776.0	0.0	-250.3	6.0	0.00	0.00	0.00	
11,900.0	0.00	0.00	11,876.0	0.0	-250.3	6.0	0.00	0.00	0.00	
TBSG Sand										
11,933.0	0.00	0.00	11,909.0	0.0	-250.3	6.0	0.00	0.00	0.00	
Build 12°/100'										
11,979.9	0.00	0.00	11,955.9	0.0	-250.3	6.0	0.00	0.00	0.00	
12,000.0	2.41	179.51	11,976.0	-0.4	-250.3	6.4	12.00	12.00	0.00	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Coonskin Fee #28H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3338.0usft (Noram 21)
Project:	Lea County, NM	MD Reference:	Well @ 3338.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #28H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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)	
12,025.0	5.41	179.51	12,001.0	-2.1	-250.3	8.1	12.00	12.00	0.00	
12,050.0	8.41	179.51	12,025.8	-5.1	-250.2	11.1	12.00	12.00	0.00	
12,075.0	11.41	179.51	12,050.4	-9.4	-250.2	15.5	12.00	12.00	0.00	
12,100.0	14.41	179.51	12,074.8	-15.0	-250.2	21.0	12.00	12.00	0.00	
12,125.0	17.41	179.51	12,098.8	-21.9	-250.1	27.9	12.00	12.00	0.00	
12,150.0	20.41	179.51	12,122.4	-30.0	-250.0	36.0	12.00	12.00	0.00	
12,175.0	23.41	179.51	12,145.6	-39.3	-250.0	45.3	12.00	12.00	0.00	
12,200.0	26.41	179.51	12,168.3	-49.8	-249.9	55.8	12.00	12.00	0.00	
12,225.0	29.41	179.51	12,190.4	-61.5	-249.8	67.5	12.00	12.00	0.00	
12,250.0	32.41	179.51	12,211.8	-74.4	-249.6	80.4	12.00	12.00	0.00	
12,275.0	35.41	179.51	12,232.6	-88.3	-249.5	94.3	12.00	12.00	0.00	
12,300.0	38.41	179.51	12,252.6	-103.4	-249.4	109.3	12.00	12.00	0.00	
12,325.0	41.41	179.51	12,271.7	-119.4	-249.3	125.3	12.00	12.00	0.00	
WFMP										
12,333.4	42.42	179.51	12,278.0	-125.0	-249.2	131.0	12.00	12.00	0.00	
12,350.0	44.41	179.51	12,290.1	-136.4	-249.1	142.4	12.00	12.00	0.00	
12,375.0	47.41	179.51	12,307.4	-154.4	-249.0	160.3	12.00	12.00	0.00	
12,400.0	50.41	179.51	12,323.9	-173.2	-248.8	179.1	12.00	12.00	0.00	
12,425.0	53.41	179.51	12,339.3	-192.9	-248.6	198.8	12.00	12.00	0.00	
12,450.0	56.41	179.51	12,353.7	-213.3	-248.5	219.2	12.00	12.00	0.00	
12,475.0	59.41	179.51	12,366.9	-234.5	-248.3	240.4	12.00	12.00	0.00	
12,500.0	62.41	179.51	12,379.1	-256.4	-248.1	262.2	12.00	12.00	0.00	
12,525.0	65.41	179.51	12,390.1	-278.8	-247.9	284.7	12.00	12.00	0.00	
12,550.0	68.41	179.51	12,399.9	-301.8	-247.7	307.7	12.00	12.00	0.00	
12,575.0	71.41	179.51	12,408.5	-325.3	-247.5	331.1	12.00	12.00	0.00	
12,600.0	74.41	179.51	12,415.8	-349.2	-247.3	355.0	12.00	12.00	0.00	
12,625.0	77.41	179.51	12,421.9	-373.4	-247.1	379.2	12.00	12.00	0.00	
12,650.0	80.41	179.51	12,426.7	-397.9	-246.9	403.8	12.00	12.00	0.00	
12,675.0	83.41	179.51	12,430.2	-422.7	-246.7	428.5	12.00	12.00	0.00	
12,700.0	86.41	179.51	12,432.4	-447.6	-246.4	453.4	12.00	12.00	0.00	
EOC @ 89.52° Inc / 179.51° Azm / 12433.3' TVD										
12,725.9	89.53	179.51	12,433.3	-473.5	-246.2	479.3	12.00	12.00	0.00	
12,800.0	89.53	179.51	12,434.0	-547.6	-245.6	553.3	0.00	0.00	0.00	
12,900.0	89.53	179.51	12,434.8	-647.6	-244.7	653.2	0.00	0.00	0.00	
13,000.0	89.53	179.51	12,435.6	-747.5	-243.9	753.2	0.00	0.00	0.00	
13,100.0	89.53	179.51	12,436.4	-847.5	-243.0	853.1	0.00	0.00	0.00	
13,200.0	89.53	179.51	12,437.3	-947.5	-242.2	953.1	0.00	0.00	0.00	
13,300.0	89.53	179.51	12,438.1	-1,047.5	-241.3	1,053.0	0.00	0.00	0.00	
13,400.0	89.53	179.51	12,438.9	-1,147.5	-240.4	1,153.0	0.00	0.00	0.00	
13,500.0	89.53	179.51	12,439.8	-1,247.5	-239.6	1,252.9	0.00	0.00	0.00	
13,600.0	89.53	179.51	12,440.6	-1,347.5	-238.7	1,352.9	0.00	0.00	0.00	
13,700.0	89.53	179.51	12,441.4	-1,447.5	-237.9	1,452.8	0.00	0.00	0.00	
13,800.0	89.53	179.51	12,442.2	-1,547.5	-237.0	1,552.7	0.00	0.00	0.00	
13,900.0	89.53	179.51	12,443.1	-1,647.5	-236.1	1,652.7	0.00	0.00	0.00	
14,000.0	89.53	179.51	12,443.9	-1,747.5	-235.3	1,752.6	0.00	0.00	0.00	
14,100.0	89.53	179.51	12,444.7	-1,847.5	-234.4	1,852.6	0.00	0.00	0.00	
14,200.0	89.53	179.51	12,445.6	-1,947.5	-233.6	1,952.5	0.00	0.00	0.00	
14,300.0	89.53	179.51	12,446.4	-2,047.5	-232.7	2,052.5	0.00	0.00	0.00	
14,400.0	89.53	179.51	12,447.2	-2,147.5	-231.9	2,152.4	0.00	0.00	0.00	
14,500.0	89.53	179.51	12,448.0	-2,247.4	-231.0	2,252.3	0.00	0.00	0.00	
14,600.0	89.53	179.51	12,448.9	-2,347.4	-230.1	2,352.3	0.00	0.00	0.00	
14,700.0	89.53	179.51	12,449.7	-2,447.4	-229.3	2,452.2	0.00	0.00	0.00	
14,800.0	89.53	179.51	12,450.5	-2,547.4	-228.4	2,552.2	0.00	0.00	0.00	



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Coonskin Fee #28H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3338.0usft (Noram 21)
Project:	Lea County, NM	MD Reference:	Well @ 3338.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #28H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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)
14,900.0	89.53	179.51	12,451.4	-2,647.4	-227.6	2,652.1	0.00	0.00	0.00
15,000.0	89.53	179.51	12,452.2	-2,747.4	-226.7	2,752.1	0.00	0.00	0.00
15,100.0	89.53	179.51	12,453.0	-2,847.4	-225.8	2,852.0	0.00	0.00	0.00
15,200.0	89.53	179.51	12,453.8	-2,947.4	-225.0	2,951.9	0.00	0.00	0.00
15,300.0	89.53	179.51	12,454.7	-3,047.4	-224.1	3,051.9	0.00	0.00	0.00
15,400.0	89.53	179.51	12,455.5	-3,147.4	-223.3	3,151.8	0.00	0.00	0.00
15,500.0	89.53	179.51	12,456.3	-3,247.4	-222.4	3,251.8	0.00	0.00	0.00
15,600.0	89.53	179.51	12,457.2	-3,347.4	-221.6	3,351.7	0.00	0.00	0.00
15,700.0	89.53	179.51	12,458.0	-3,447.4	-220.7	3,451.7	0.00	0.00	0.00
15,800.0	89.53	179.51	12,458.8	-3,547.4	-219.8	3,551.6	0.00	0.00	0.00
15,900.0	89.53	179.51	12,459.6	-3,647.3	-219.0	3,651.6	0.00	0.00	0.00
16,000.0	89.53	179.51	12,460.5	-3,747.3	-218.1	3,751.5	0.00	0.00	0.00
16,100.0	89.53	179.51	12,461.3	-3,847.3	-217.3	3,851.4	0.00	0.00	0.00
16,200.0	89.53	179.51	12,462.1	-3,947.3	-216.4	3,951.4	0.00	0.00	0.00
16,300.0	89.53	179.51	12,463.0	-4,047.3	-215.5	4,051.3	0.00	0.00	0.00
16,400.0	89.53	179.51	12,463.8	-4,147.3	-214.7	4,151.3	0.00	0.00	0.00
16,500.0	89.53	179.51	12,464.6	-4,247.3	-213.8	4,251.2	0.00	0.00	0.00
16,600.0	89.53	179.51	12,465.4	-4,347.3	-213.0	4,351.2	0.00	0.00	0.00
16,700.0	89.53	179.51	12,466.3	-4,447.3	-212.1	4,451.1	0.00	0.00	0.00
16,800.0	89.53	179.51	12,467.1	-4,547.3	-211.3	4,551.0	0.00	0.00	0.00
16,900.0	89.53	179.51	12,467.9	-4,647.3	-210.4	4,651.0	0.00	0.00	0.00
17,000.0	89.53	179.51	12,468.7	-4,747.3	-209.5	4,750.9	0.00	0.00	0.00
17,100.0	89.53	179.51	12,469.6	-4,847.3	-208.7	4,850.9	0.00	0.00	0.00
17,200.0	89.53	179.51	12,470.4	-4,947.3	-207.8	4,950.8	0.00	0.00	0.00
17,300.0	89.53	179.51	12,471.2	-5,047.2	-207.0	5,050.8	0.00	0.00	0.00
17,400.0	89.53	179.51	12,472.1	-5,147.2	-206.1	5,150.7	0.00	0.00	0.00
17,500.0	89.53	179.51	12,472.9	-5,247.2	-205.2	5,250.6	0.00	0.00	0.00
17,600.0	89.53	179.51	12,473.7	-5,347.2	-204.4	5,350.6	0.00	0.00	0.00
17,700.0	89.53	179.51	12,474.5	-5,447.2	-203.5	5,450.5	0.00	0.00	0.00
17,800.0	89.53	179.51	12,475.4	-5,547.2	-202.7	5,550.5	0.00	0.00	0.00
17,900.0	89.53	179.51	12,476.2	-5,647.2	-201.8	5,650.4	0.00	0.00	0.00
18,000.0	89.53	179.51	12,477.0	-5,747.2	-200.9	5,750.4	0.00	0.00	0.00
18,100.0	89.53	179.51	12,477.9	-5,847.2	-200.1	5,850.3	0.00	0.00	0.00
18,200.0	89.53	179.51	12,478.7	-5,947.2	-199.2	5,950.2	0.00	0.00	0.00
18,300.0	89.53	179.51	12,479.5	-6,047.2	-198.4	6,050.2	0.00	0.00	0.00
18,400.0	89.53	179.51	12,480.3	-6,147.2	-197.5	6,150.1	0.00	0.00	0.00
18,500.0	89.53	179.51	12,481.2	-6,247.2	-196.7	6,250.1	0.00	0.00	0.00
18,600.0	89.53	179.51	12,482.0	-6,347.2	-195.8	6,350.0	0.00	0.00	0.00
18,700.0	89.53	179.51	12,482.8	-6,447.1	-194.9	6,450.0	0.00	0.00	0.00
18,800.0	89.53	179.51	12,483.7	-6,547.1	-194.1	6,549.9	0.00	0.00	0.00
18,900.0	89.53	179.51	12,484.5	-6,647.1	-193.2	6,649.9	0.00	0.00	0.00
19,000.0	89.53	179.51	12,485.3	-6,747.1	-192.4	6,749.8	0.00	0.00	0.00
19,100.0	89.53	179.51	12,486.1	-6,847.1	-191.5	6,849.7	0.00	0.00	0.00
19,200.0	89.53	179.51	12,487.0	-6,947.1	-190.6	6,949.7	0.00	0.00	0.00
19,300.0	89.53	179.51	12,487.8	-7,047.1	-189.8	7,049.6	0.00	0.00	0.00
19,400.0	89.53	179.51	12,488.6	-7,147.1	-188.9	7,149.6	0.00	0.00	0.00
19,500.0	89.53	179.51	12,489.5	-7,247.1	-188.1	7,249.5	0.00	0.00	0.00
19,600.0	89.53	179.51	12,490.3	-7,347.1	-187.2	7,349.5	0.00	0.00	0.00
19,700.0	89.53	179.51	12,491.1	-7,447.1	-186.4	7,449.4	0.00	0.00	0.00
19,800.0	89.53	179.51	12,491.9	-7,547.1	-185.5	7,549.3	0.00	0.00	0.00
19,900.0	89.53	179.51	12,492.8	-7,647.1	-184.6	7,649.3	0.00	0.00	0.00
TD @ 19927.8' MD / 12493.0' TVD									
19,927.8	89.53	179.51	12,493.0	-7,674.9	-184.4	7,677.1	0.00	0.00	0.00



Well Planning Report



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Project:	Lea County, NM	MD Reference:	Well @ 3338.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #28H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
FTP - Coonskin Fee #28 - plan misses target center by 38.0usft at 12545.0usft MD (12398.0 TVD, -297.1 N, -247.7 E) - Point	0.00	0.00	12,433.0	-282.2	-247.7	435,868.90	795,083.40	32° 11' 41.002 N	103° 22' 45.958 W
LTP - Coonskin Fee #28 - plan misses target center by 2.0usft at 19797.4usft MD (12491.9 TVD, -7544.5 N, -185.5 E) - Point	0.00	0.00	12,489.9	-7,544.5	-185.5	428,806.60	795,145.60	32° 10' 29.135 N	103° 22' 45.984 W
PBHL - Coonskin Fee #28 - plan hits target center - Point	0.00	0.00	12,493.0	-7,674.9	-184.4	428,476.20	795,146.70	32° 10' 27.845 N	103° 22' 45.985 W

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
588.0	588.0	Rustler				
947.0	947.0	TOS				
4,866.0	4,866.0	BOS (Fletcher)				
5,303.6	5,303.0	LMAR (Top Delaware)				
5,365.0	5,364.0	BLCN				
6,305.5	6,283.0	CYCN				
7,792.0	7,768.0	BYCN				
9,082.0	9,058.0	Bone Sprg (BSGL)				
9,514.0	9,490.0	U Avalon Sh				
9,679.0	9,655.0	L Avalon Sh				
10,184.0	10,160.0	B Avalon Sh				
10,263.0	10,239.0	FBSG Sand				
10,903.0	10,879.0	SBSG Sand				
11,430.0	11,406.0	SBSG Sand Base				
11,933.0	11,909.0	TBSG Sand				
12,333.4	12,278.0	WFMP				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
		(usft)	(usft)		
5,000.0	5,000.0	0.0	0.0	Build 2°/100'	
5,719.0	5,711.5	0.0	-89.8	EOB @ 14.38° Inc / 270.00° Azm	
6,004.0	5,987.5	0.0	-160.5	Drop 2°/100'	
6,723.0	6,699.0	0.0	-250.3	EOD @ Vertical	
11,979.9	11,955.9	0.0	-250.3	Build 12°/100'	
12,725.9	12,433.3	-473.5	-246.2	EOC @ 89.52° Inc / 179.51° Azm / 12433.3' TVD	
19,927.8	12,493.0	-7,674.9	-184.4	TD @ 19927.8' MD / 12493.0' TVD	