

Sec 28, T24S, R35E
Coonskin Fee #702H
Q180*** & WT-180***
Design #2

Company Name: COG Operating, LLC
Coonskin Fee #702H
Lea County, NM
Rig: Noram 21
Created by: Chase Chambers
Date: 9:35, August 03 2018

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 3301
System Datum: Mean Sea Level



WELL DETAILS: Coonskin Fee #702H

3307.0

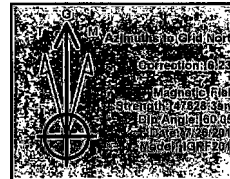
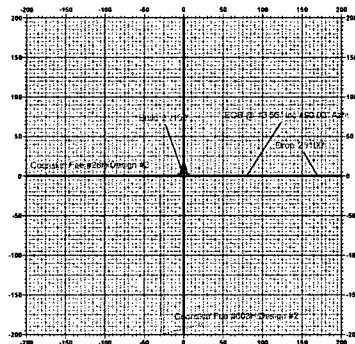
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	436151.70	795391.10	32° 11' 43.773 N	103° 22' 42.349 W

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP - Coonskin #702H	12471.0	-277.7	252.3	435874.00	795843.40	32° 11' 41.003 N	103° 22' 39.441 W
LTP - Coonskin #702H	12508.1	-2535.3	316.4	428511.80	795705.50	32° 10' 29.130 N	103° 22' 39.470 W
PBRL - Coonskin #702H	12519.0	-7869.9	315.5	428481.80	795706.50	32° 10' 27.851 N	103° 22' 39.470 W

SECTION DETAILS

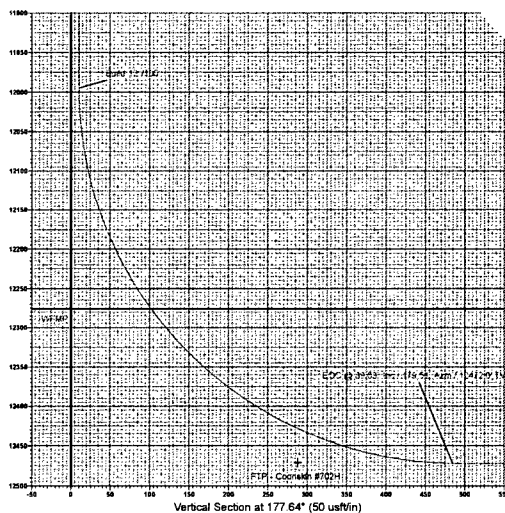
MD	Inc	Azi	TVD	+N/-S	+E/-W	Deg	TFace	VFace	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	Build 2°/100'
5000.0	0.00	0.00	5000.0	0.0	0.0	0.00	0.00	0.0	EOB @ 13.55° Inc / 80.00° Azm
5677.6	13.55	90.00	5677.2	0.0	79.7	2.00	90.00	3.3	Drop 2°/100'
6062.5	13.55	90.00	6045.5	0.0	169.9	0.00	0.00	7.0	EOB @ Vertical
6740.0	0.00	0.00	6740.7	0.0	243.7	2.00	180.00	10.3	Build 12°/100'
12017.8	0.00	0.00	11984.5	0.0	243.7	0.00	0.00	10.3	EOB @ 89.53° Inc / 179.51° Azm / 12472.0' TVD
12764.7	89.53	179.51	12472.0	-474.3	253.8	12.00	179.51	464.4	TD @ 19960.7 MD / 12519.0' TVD
19960.7	89.53	179.51	12519.0	-7869.9	315.5	0.00	0.00	7876.4	



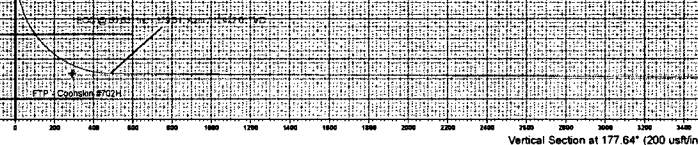
HOBBS OCD

AUG 07 2018

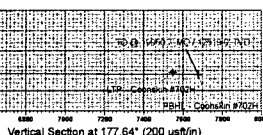
RECEIVED



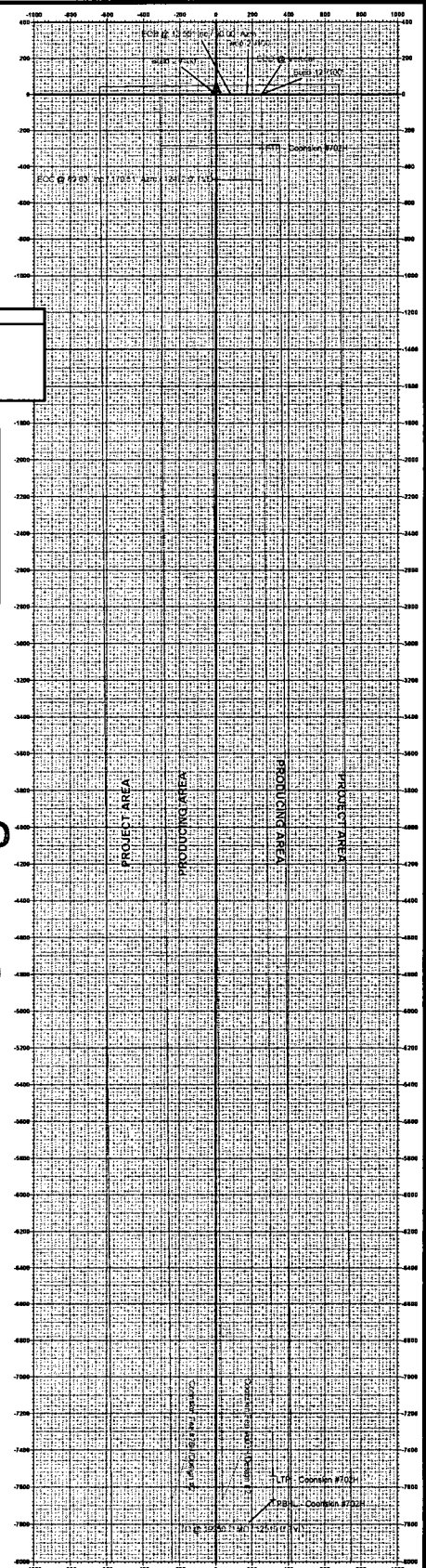
Vertical Section at 177.64° (50 usf/in)



Vertical Section at 177.64° (200 usf/in)



Vertical Section at 177.64° (200 usf/in)





COG Operating, LLC

Lea County, NM

Sec 28, T24S, R35E

Coonskin Fee #702H

Wellbore #1

Plan: Design #2

QES Well Planning Report

03 August, 2018

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Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Coonskin Fee #702H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3336.0usft (Noram 21)
Project:	Lea County, NM	MD Reference:	Well @ 3336.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #702H	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
From:	Map	Easting:	797,062.30 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 11' 42.192 N
		Longitude:	103° 22' 22.917 W
		Grid Convergence:	0.51 °

Well	Coonskin Fee #702H		
Well Position	+N/-S	144.9 usft	Northing:
	+E/-W	-1,671.2 usft	Easting:
Position Uncertainty	0.0 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2015	7/26/2018	6.74
			Dip Angle
			(°)
			60.05
			Field Strength
			(nT)
			47,828.32231885

Design	Design #2		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			177.64

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
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	
5,677.5	13.55	90.00	5,671.2	0.0	79.7	2.00	2.00	0.00	90.00	
6,062.5	13.55	90.00	6,045.5	0.0	169.9	0.00	0.00	0.00	0.00	
6,740.0	0.00	0.00	6,716.7	0.0	249.7	2.00	-2.00	0.00	180.00	
12,017.8	0.00	0.00	11,994.5	0.0	249.7	0.00	0.00	0.00	0.00	
12,764.7	89.63	179.51	12,472.0	-474.3	253.8	12.00	12.00	24.03	179.51	
19,960.7	89.63	179.51	12,519.0	-7,669.9	315.5	0.00	0.00	0.00	0.00	PBHL - Coonskin #70



Well Planning Report



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Company:	COG Operating, LLC	TVD Reference:	Well @ 3336.0usft (Noram 21)
Project:	Lea County, NM	MD Reference:	Well @ 3336.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #702H	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									
586.0	0.00	0.00	586.0	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									
945.0	0.00	0.00	945.0	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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Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #702H	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)									
4,864.0	0.00	0.00	4,864.0	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	90.00	5,100.0	0.0	1.7	0.1	2.00	2.00	0.00
5,200.0	4.00	90.00	5,199.8	0.0	7.0	0.3	2.00	2.00	0.00
5,300.0	6.00	90.00	5,299.5	0.0	15.7	0.6	2.00	2.00	0.00
LMAR (Top Delaware)									
5,301.6	6.03	90.00	5,301.0	0.0	15.9	0.7	2.00	2.00	0.00
BLCN									
5,363.0	7.26	90.00	5,362.0	0.0	23.0	0.9	2.00	2.00	0.00
5,400.0	8.00	90.00	5,398.7	0.0	27.9	1.1	2.00	2.00	0.00
5,500.0	10.00	90.00	5,497.5	0.0	43.5	1.8	2.00	2.00	0.00
5,600.0	12.00	90.00	5,595.6	0.0	62.6	2.6	2.00	2.00	0.00
EOB @ 13.55° Inc / 90.00° Azm									
5,677.5	13.55	90.00	5,671.2	0.0	79.7	3.3	2.00	2.00	0.00
5,700.0	13.55	90.00	5,693.1	0.0	85.0	3.5	0.00	0.00	0.00
5,800.0	13.55	90.00	5,790.3	0.0	108.4	4.5	0.00	0.00	0.00
5,900.0	13.55	90.00	5,887.5	0.0	131.9	5.4	0.00	0.00	0.00
6,000.0	13.55	90.00	5,984.7	0.0	155.3	6.4	0.00	0.00	0.00
Drop 2°/100'									
6,062.5	13.55	90.00	6,045.5	0.0	169.9	7.0	0.00	0.00	0.00
6,100.0	12.80	90.00	6,082.0	0.0	178.5	7.3	2.00	-2.00	0.00
6,200.0	10.80	90.00	6,179.9	0.0	198.9	8.2	2.00	-2.00	0.00
6,300.0	8.80	90.00	6,278.4	0.0	216.0	8.9	2.00	-2.00	0.00
CYCN									
6,302.6	8.75	90.00	6,281.0	0.0	216.4	8.9	2.00	-2.00	0.00
6,400.0	6.80	90.00	6,377.5	0.0	229.5	9.4	2.00	-2.00	0.00
6,500.0	4.80	90.00	6,477.0	0.0	239.6	9.8	2.00	-2.00	0.00
6,600.0	2.80	90.00	6,576.7	0.0	246.3	10.1	2.00	-2.00	0.00
6,700.0	0.80	90.00	6,676.7	0.0	249.4	10.3	2.00	-2.00	0.00
EOD @ Vertical									
6,740.0	0.00	0.00	6,716.7	0.0	249.7	10.3	2.00	-2.00	-225.00
6,800.0	0.00	0.00	6,776.7	0.0	249.7	10.3	0.00	0.00	0.00
6,900.0	0.00	0.00	6,876.7	0.0	249.7	10.3	0.00	0.00	0.00
7,000.0	0.00	0.00	6,976.7	0.0	249.7	10.3	0.00	0.00	0.00
7,100.0	0.00	0.00	7,076.7	0.0	249.7	10.3	0.00	0.00	0.00
7,200.0	0.00	0.00	7,176.7	0.0	249.7	10.3	0.00	0.00	0.00
7,300.0	0.00	0.00	7,276.7	0.0	249.7	10.3	0.00	0.00	0.00
7,400.0	0.00	0.00	7,376.7	0.0	249.7	10.3	0.00	0.00	0.00
7,500.0	0.00	0.00	7,476.7	0.0	249.7	10.3	0.00	0.00	0.00
7,600.0	0.00	0.00	7,576.7	0.0	249.7	10.3	0.00	0.00	0.00
7,700.0	0.00	0.00	7,676.7	0.0	249.7	10.3	0.00	0.00	0.00
BYCN									
7,789.3	0.00	0.00	7,766.0	0.0	249.7	10.3	0.00	0.00	0.00
7,800.0	0.00	0.00	7,776.7	0.0	249.7	10.3	0.00	0.00	0.00
7,900.0	0.00	0.00	7,876.7	0.0	249.7	10.3	0.00	0.00	0.00
8,000.0	0.00	0.00	7,976.7	0.0	249.7	10.3	0.00	0.00	0.00
8,100.0	0.00	0.00	8,076.7	0.0	249.7	10.3	0.00	0.00	0.00
8,200.0	0.00	0.00	8,176.7	0.0	249.7	10.3	0.00	0.00	0.00
8,300.0	0.00	0.00	8,276.7	0.0	249.7	10.3	0.00	0.00	0.00
8,400.0	0.00	0.00	8,376.7	0.0	249.7	10.3	0.00	0.00	0.00



Well Planning Report



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Company:	COG Operating, LLC	TVD Reference:	Well @ 3336.0usft (Noram 21)
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Well:	Coonskin Fee #702H	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)
8,500.0	0.00	0.00	8,476.7	0.0	249.7	10.3	0.00	0.00	0.00
8,600.0	0.00	0.00	8,576.7	0.0	249.7	10.3	0.00	0.00	0.00
8,700.0	0.00	0.00	8,676.7	0.0	249.7	10.3	0.00	0.00	0.00
8,800.0	0.00	0.00	8,776.7	0.0	249.7	10.3	0.00	0.00	0.00
8,900.0	0.00	0.00	8,876.7	0.0	249.7	10.3	0.00	0.00	0.00
9,000.0	0.00	0.00	8,976.7	0.0	249.7	10.3	0.00	0.00	0.00
Bone Sprg (BSGL)									
9,079.3	0.00	0.00	9,056.0	0.0	249.7	10.3	0.00	0.00	0.00
9,100.0	0.00	0.00	9,076.7	0.0	249.7	10.3	0.00	0.00	0.00
9,200.0	0.00	0.00	9,176.7	0.0	249.7	10.3	0.00	0.00	0.00
9,300.0	0.00	0.00	9,276.7	0.0	249.7	10.3	0.00	0.00	0.00
9,400.0	0.00	0.00	9,376.7	0.0	249.7	10.3	0.00	0.00	0.00
9,500.0	0.00	0.00	9,476.7	0.0	249.7	10.3	0.00	0.00	0.00
U Avalon Sh									
9,511.3	0.00	0.00	9,488.0	0.0	249.7	10.3	0.00	0.00	0.00
9,600.0	0.00	0.00	9,576.7	0.0	249.7	10.3	0.00	0.00	0.00
L Avalon Sh									
9,676.3	0.00	0.00	9,653.0	0.0	249.7	10.3	0.00	0.00	0.00
9,700.0	0.00	0.00	9,676.7	0.0	249.7	10.3	0.00	0.00	0.00
9,800.0	0.00	0.00	9,776.7	0.0	249.7	10.3	0.00	0.00	0.00
9,900.0	0.00	0.00	9,876.7	0.0	249.7	10.3	0.00	0.00	0.00
10,000.0	0.00	0.00	9,976.7	0.0	249.7	10.3	0.00	0.00	0.00
10,100.0	0.00	0.00	10,076.7	0.0	249.7	10.3	0.00	0.00	0.00
B Avalon Sh									
10,181.3	0.00	0.00	10,158.0	0.0	249.7	10.3	0.00	0.00	0.00
10,200.0	0.00	0.00	10,176.7	0.0	249.7	10.3	0.00	0.00	0.00
FBSG Sand									
10,260.3	0.00	0.00	10,237.0	0.0	249.7	10.3	0.00	0.00	0.00
10,300.0	0.00	0.00	10,276.7	0.0	249.7	10.3	0.00	0.00	0.00
10,400.0	0.00	0.00	10,376.7	0.0	249.7	10.3	0.00	0.00	0.00
10,500.0	0.00	0.00	10,476.7	0.0	249.7	10.3	0.00	0.00	0.00
10,600.0	0.00	0.00	10,576.7	0.0	249.7	10.3	0.00	0.00	0.00
10,700.0	0.00	0.00	10,676.7	0.0	249.7	10.3	0.00	0.00	0.00
10,800.0	0.00	0.00	10,776.7	0.0	249.7	10.3	0.00	0.00	0.00
10,900.0	0.00	0.00	10,876.7	0.0	249.7	10.3	0.00	0.00	0.00
SBSG Sand									
10,900.3	0.00	0.00	10,877.0	0.0	249.7	10.3	0.00	0.00	0.00
11,000.0	0.00	0.00	10,976.7	0.0	249.7	10.3	0.00	0.00	0.00
11,100.0	0.00	0.00	11,076.7	0.0	249.7	10.3	0.00	0.00	0.00
11,200.0	0.00	0.00	11,176.7	0.0	249.7	10.3	0.00	0.00	0.00
11,300.0	0.00	0.00	11,276.7	0.0	249.7	10.3	0.00	0.00	0.00
SBSG Sand Base									
11,389.3	0.00	0.00	11,366.0	0.0	249.7	10.3	0.00	0.00	0.00
11,400.0	0.00	0.00	11,376.7	0.0	249.7	10.3	0.00	0.00	0.00
11,500.0	0.00	0.00	11,476.7	0.0	249.7	10.3	0.00	0.00	0.00
11,600.0	0.00	0.00	11,576.7	0.0	249.7	10.3	0.00	0.00	0.00
11,700.0	0.00	0.00	11,676.7	0.0	249.7	10.3	0.00	0.00	0.00
11,800.0	0.00	0.00	11,776.7	0.0	249.7	10.3	0.00	0.00	0.00
TBSG Sand									
11,892.3	0.00	0.00	11,869.0	0.0	249.7	10.3	0.00	0.00	0.00
11,900.0	0.00	0.00	11,876.7	0.0	249.7	10.3	0.00	0.00	0.00
12,000.0	0.00	0.00	11,976.7	0.0	249.7	10.3	0.00	0.00	0.00
Build 12°/100'									



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Coonskin Fee #702H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3336.0usft (Noram 21)
Project:	Lea County, NM	MD Reference:	Well @ 3336.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #702H	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)
12,017.8	0.00	0.00	11,994.5	0.0	249.7	10.3	0.00	0.00	0.00
12,025.0	0.86	179.51	12,001.7	-0.1	249.7	10.3	11.98	11.98	0.00
12,050.0	3.86	179.51	12,026.7	-1.1	249.7	11.3	12.00	12.00	0.00
12,075.0	6.86	179.51	12,051.6	-3.4	249.7	13.7	12.00	12.00	0.00
12,100.0	9.86	179.51	12,076.3	-7.1	249.7	17.3	12.00	12.00	0.00
12,125.0	12.86	179.51	12,100.8	-12.0	249.8	22.2	12.00	12.00	0.00
12,150.0	15.86	179.51	12,125.0	-18.2	249.8	28.4	12.00	12.00	0.00
12,175.0	18.86	179.51	12,148.9	-25.6	249.9	35.9	12.00	12.00	0.00
12,200.0	21.86	179.51	12,172.3	-34.3	250.0	44.6	12.00	12.00	0.00
12,225.0	24.86	179.51	12,195.2	-44.3	250.1	54.5	12.00	12.00	0.00
12,250.0	27.86	179.51	12,217.6	-55.4	250.2	65.6	12.00	12.00	0.00
12,275.0	30.86	179.51	12,239.4	-67.6	250.3	77.8	12.00	12.00	0.00
12,300.0	33.86	179.51	12,260.5	-81.0	250.4	91.2	12.00	12.00	0.00
WFMP									
12,318.9	36.13	179.51	12,276.0	-91.8	250.5	102.0	12.00	12.00	0.00
12,325.0	36.86	179.51	12,280.9	-95.5	250.5	105.7	12.00	12.00	0.00
12,350.0	39.86	179.51	12,300.5	-111.0	250.6	121.2	12.00	12.00	0.00
12,375.0	42.86	179.51	12,319.3	-127.5	250.8	137.7	12.00	12.00	0.00
12,400.0	45.86	179.51	12,337.2	-145.0	250.9	155.2	12.00	12.00	0.00
12,425.0	48.86	179.51	12,354.1	-163.4	251.1	173.5	12.00	12.00	0.00
12,450.0	51.86	179.51	12,370.0	-182.6	251.2	192.8	12.00	12.00	0.00
12,475.0	54.86	179.51	12,385.0	-202.7	251.4	212.8	12.00	12.00	0.00
12,500.0	57.86	179.51	12,398.8	-223.5	251.6	233.6	12.00	12.00	0.00
12,525.0	60.86	179.51	12,411.5	-245.0	251.8	255.1	12.00	12.00	0.00
12,550.0	63.86	179.51	12,423.1	-267.1	252.0	277.3	12.00	12.00	0.00
12,575.0	66.86	179.51	12,433.6	-289.8	252.2	300.0	12.00	12.00	0.00
12,600.0	69.86	179.51	12,442.8	-313.1	252.4	323.2	12.00	12.00	0.00
12,625.0	72.86	179.51	12,450.8	-336.8	252.6	346.9	12.00	12.00	0.00
12,650.0	75.86	179.51	12,457.5	-360.8	252.8	370.9	12.00	12.00	0.00
12,675.0	78.86	179.51	12,463.0	-385.2	253.0	395.3	12.00	12.00	0.00
12,700.0	81.86	179.51	12,467.2	-409.9	253.2	419.9	12.00	12.00	0.00
12,725.0	84.86	179.51	12,470.0	-434.7	253.4	444.7	12.00	12.00	0.00
12,750.0	87.86	179.51	12,471.6	-459.6	253.6	469.7	12.00	12.00	0.00
EOC @ 89.63° Inc / 179.51° Azm / 12472.0' TVD									
12,764.7	89.63	179.51	12,472.0	-474.3	253.8	484.4	11.99	11.99	0.00
12,800.0	89.63	179.51	12,472.2	-509.6	254.1	519.6	0.00	0.00	0.00
12,900.0	89.63	179.51	12,472.8	-609.6	254.9	619.6	0.00	0.00	0.00
13,000.0	89.63	179.51	12,473.5	-709.6	255.8	719.5	0.00	0.00	0.00
13,100.0	89.63	179.51	12,474.1	-809.6	256.6	819.5	0.00	0.00	0.00
13,200.0	89.63	179.51	12,474.8	-909.6	257.5	919.4	0.00	0.00	0.00
13,300.0	89.63	179.51	12,475.5	-1,009.6	258.3	1,019.4	0.00	0.00	0.00
13,400.0	89.63	179.51	12,476.1	-1,109.6	259.2	1,119.3	0.00	0.00	0.00
13,500.0	89.63	179.51	12,476.8	-1,209.6	260.1	1,219.3	0.00	0.00	0.00
13,600.0	89.63	179.51	12,477.4	-1,309.6	260.9	1,319.2	0.00	0.00	0.00
13,700.0	89.63	179.51	12,478.1	-1,409.6	261.8	1,419.1	0.00	0.00	0.00
13,800.0	89.63	179.51	12,478.7	-1,509.6	262.6	1,519.1	0.00	0.00	0.00
13,900.0	89.63	179.51	12,479.4	-1,609.6	263.5	1,619.0	0.00	0.00	0.00
14,000.0	89.63	179.51	12,480.0	-1,709.6	264.4	1,719.0	0.00	0.00	0.00
14,100.0	89.63	179.51	12,480.7	-1,809.6	265.2	1,818.9	0.00	0.00	0.00
14,200.0	89.63	179.51	12,481.3	-1,909.6	266.1	1,918.9	0.00	0.00	0.00
14,300.0	89.63	179.51	12,482.0	-2,009.5	266.9	2,018.8	0.00	0.00	0.00
14,400.0	89.63	179.51	12,482.6	-2,109.5	267.8	2,118.8	0.00	0.00	0.00
14,500.0	89.63	179.51	12,483.3	-2,209.5	268.6	2,218.7	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Coonskin Fee #702H
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Project:	Lea County, NM	MD Reference:	Well @ 3336.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #702H	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)
14,600.0	89.63	179.51	12,484.0	-2,309.5	269.5	2,318.7	0.00	0.00	0.00
14,700.0	89.63	179.51	12,484.6	-2,409.5	270.4	2,418.6	0.00	0.00	0.00
14,800.0	89.63	179.51	12,485.3	-2,509.5	271.2	2,518.5	0.00	0.00	0.00
14,900.0	89.63	179.51	12,485.9	-2,609.5	272.1	2,618.5	0.00	0.00	0.00
15,000.0	89.63	179.51	12,486.6	-2,709.5	272.9	2,718.4	0.00	0.00	0.00
15,100.0	89.63	179.51	12,487.2	-2,809.5	273.8	2,818.4	0.00	0.00	0.00
15,200.0	89.63	179.51	12,487.9	-2,909.5	274.6	2,918.3	0.00	0.00	0.00
15,300.0	89.63	179.51	12,488.5	-3,009.5	275.5	3,018.3	0.00	0.00	0.00
15,400.0	89.63	179.51	12,489.2	-3,109.5	276.4	3,118.2	0.00	0.00	0.00
15,500.0	89.63	179.51	12,489.8	-3,209.5	277.2	3,218.2	0.00	0.00	0.00
15,600.0	89.63	179.51	12,490.5	-3,309.5	278.1	3,318.1	0.00	0.00	0.00
15,700.0	89.63	179.51	12,491.1	-3,409.5	278.9	3,418.0	0.00	0.00	0.00
15,800.0	89.63	179.51	12,491.8	-3,509.5	279.8	3,518.0	0.00	0.00	0.00
15,900.0	89.63	179.51	12,492.5	-3,609.5	280.7	3,617.9	0.00	0.00	0.00
16,000.0	89.63	179.51	12,493.1	-3,709.4	281.5	3,717.9	0.00	0.00	0.00
16,100.0	89.63	179.51	12,493.8	-3,809.4	282.4	3,817.8	0.00	0.00	0.00
16,200.0	89.63	179.51	12,494.4	-3,909.4	283.2	3,917.8	0.00	0.00	0.00
16,300.0	89.63	179.51	12,495.1	-4,009.4	284.1	4,017.7	0.00	0.00	0.00
16,400.0	89.63	179.51	12,495.7	-4,109.4	284.9	4,117.7	0.00	0.00	0.00
16,500.0	89.63	179.51	12,496.4	-4,209.4	285.8	4,217.6	0.00	0.00	0.00
16,600.0	89.63	179.51	12,497.0	-4,309.4	286.7	4,317.6	0.00	0.00	0.00
16,700.0	89.63	179.51	12,497.7	-4,409.4	287.5	4,417.5	0.00	0.00	0.00
16,800.0	89.63	179.51	12,498.3	-4,509.4	288.4	4,517.4	0.00	0.00	0.00
16,900.0	89.63	179.51	12,499.0	-4,609.4	289.2	4,617.4	0.00	0.00	0.00
17,000.0	89.63	179.51	12,499.6	-4,709.4	290.1	4,717.3	0.00	0.00	0.00
17,100.0	89.63	179.51	12,500.3	-4,809.4	291.0	4,817.3	0.00	0.00	0.00
17,200.0	89.63	179.51	12,501.0	-4,909.4	291.8	4,917.2	0.00	0.00	0.00
17,300.0	89.63	179.51	12,501.6	-5,009.4	292.7	5,017.2	0.00	0.00	0.00
17,400.0	89.63	179.51	12,502.3	-5,109.4	293.5	5,117.1	0.00	0.00	0.00
17,500.0	89.63	179.51	12,502.9	-5,209.4	294.4	5,217.1	0.00	0.00	0.00
17,600.0	89.63	179.51	12,503.6	-5,309.4	295.2	5,317.0	0.00	0.00	0.00
17,700.0	89.63	179.51	12,504.2	-5,409.3	296.1	5,416.9	0.00	0.00	0.00
17,800.0	89.63	179.51	12,504.9	-5,509.3	297.0	5,516.9	0.00	0.00	0.00
17,900.0	89.63	179.51	12,505.5	-5,609.3	297.8	5,616.8	0.00	0.00	0.00
18,000.0	89.63	179.51	12,506.2	-5,709.3	298.7	5,716.8	0.00	0.00	0.00
18,100.0	89.63	179.51	12,506.8	-5,809.3	299.5	5,816.7	0.00	0.00	0.00
18,200.0	89.63	179.51	12,507.5	-5,909.3	300.4	5,916.7	0.00	0.00	0.00
18,300.0	89.63	179.51	12,508.1	-6,009.3	301.2	6,016.6	0.00	0.00	0.00
18,400.0	89.63	179.51	12,508.8	-6,109.3	302.1	6,116.6	0.00	0.00	0.00
18,500.0	89.63	179.51	12,509.5	-6,209.3	303.0	6,216.5	0.00	0.00	0.00
18,600.0	89.63	179.51	12,510.1	-6,309.3	303.8	6,316.5	0.00	0.00	0.00
18,700.0	89.63	179.51	12,510.8	-6,409.3	304.7	6,416.4	0.00	0.00	0.00
18,800.0	89.63	179.51	12,511.4	-6,509.3	305.5	6,516.3	0.00	0.00	0.00
18,900.0	89.63	179.51	12,512.1	-6,609.3	306.4	6,616.3	0.00	0.00	0.00
19,000.0	89.63	179.51	12,512.7	-6,709.3	307.3	6,716.2	0.00	0.00	0.00
19,100.0	89.63	179.51	12,513.4	-6,809.3	308.1	6,816.2	0.00	0.00	0.00
19,200.0	89.63	179.51	12,514.0	-6,909.3	309.0	6,916.1	0.00	0.00	0.00
19,300.0	89.63	179.51	12,514.7	-7,009.3	309.8	7,016.1	0.00	0.00	0.00
19,400.0	89.63	179.51	12,515.3	-7,109.2	310.7	7,116.0	0.00	0.00	0.00
19,500.0	89.63	179.51	12,516.0	-7,209.2	311.5	7,216.0	0.00	0.00	0.00
19,600.0	89.63	179.51	12,516.6	-7,309.2	312.4	7,315.9	0.00	0.00	0.00
19,700.0	89.63	179.51	12,517.3	-7,409.2	313.3	7,415.8	0.00	0.00	0.00
19,800.0	89.63	179.51	12,517.9	-7,509.2	314.1	7,515.8	0.00	0.00	0.00
19,900.0	89.63	179.51	12,518.6	-7,609.2	315.0	7,615.7	0.00	0.00	0.00

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Project:	Lea County, NM	MD Reference:	Well @ 3336.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #702H	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)
TD @ 19960.7' MD / 12519.0' TVD									
19,960.7	89.63	179.51	12,519.0	-7,669.9	315.5	7,676.4	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
FTP - Coonskin #702H	0.00	0.00	12,471.0	-277.7	252.3	435,874.00	795,643.40	32° 11' 41.003 N	103° 22' 39.441 W
- hit/miss target									
- Shape									
- Point									
LTP - Coonskin #702H	0.00	0.00	12,508.1	-7,539.9	314.4	428,611.80	795,705.50	32° 10' 29.138 N	103° 22' 39.470 W
- plan misses target center by 10.0usft at 19830.6usft MD (12518.1 TVD, -7539.8 N, 314.4 E)									
- Point									
PBHL - Coonskin #702H	0.00	0.00	12,519.0	-7,669.9	315.5	428,481.80	795,706.60	32° 10' 27.851 N	103° 22' 39.470 W
- plan hits target center									
- Point									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
586.0	586.0	Rustler				
945.0	945.0	TOS				
4,864.0	4,864.0	BOS (Fletcher)				
5,301.6	5,301.0	LMAR (Top Delaware)				
5,363.0	5,362.0	BLCN				
6,302.6	6,281.0	CYCN				
7,789.3	7,766.0	BYCN				
9,079.3	9,056.0	Bone Sprg (BSGL)				
9,511.3	9,488.0	U Avalon Sh				
9,676.3	9,653.0	L Avalon Sh				
10,181.3	10,158.0	B Avalon Sh				
10,260.3	10,237.0	FBSG Sand				
10,900.3	10,877.0	SBSG Sand				
11,389.3	11,366.0	SBSG Sand Base				
11,892.3	11,869.0	TBSG Sand				
12,318.9	12,276.0	WFMP				



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Coonskin Fee #702H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3336.0usft (Noram 21)
Project:	Lea County, NM	MD Reference:	Well @ 3336.0usft (Noram 21)
Site:	Sec 28, T24S, R35E	North Reference:	Grid
Well:	Coonskin Fee #702H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,000.0	5,000.0	0.0	0.0	Build 2°/100'
5,677.5	5,671.2	0.0	79.7	EOB @ 13.55° Inc / 90.00° Azm
6,062.5	6,045.5	0.0	169.9	Drop 2°/100'
6,740.0	6,716.7	0.0	249.7	EOD @ Vertical
12,017.8	11,994.5	0.0	249.7	Build 12°/100'
12,764.7	12,472.0	-474.3	253.8	EOC @ 89.63° Inc / 179.51° Azm / 12472.0' TVD
19,960.7	12,519.0	-7,669.9	315.5	TD @ 19960.7' MD / 12519.0' TVD