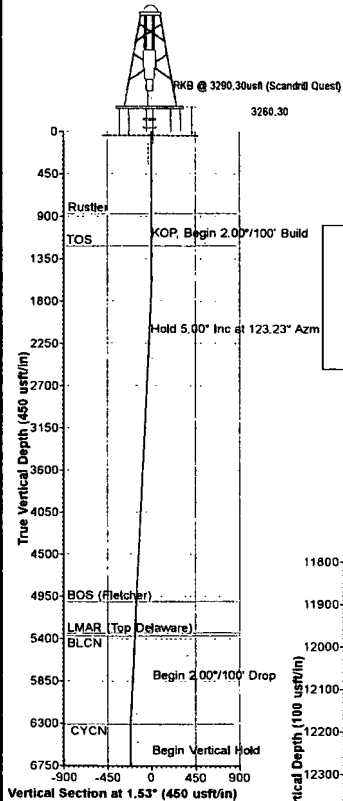




Project: Lea County, NM (NAD27 NME)
Site: Fez Federal Com
Well: 704H
Wellbore: OH
Design: Plan 1 10-12-18
Rig: Scandriil Quest



Azimuths to Grid North
True North: -0.51°
Magnetic North: 6.17°
Magnetic Field
Strength: 47835.9nT
Dip Angle: 59.80°
Date: 10/11/2018
Model: MVHD



WELL DETAILS					
+N-S	+E-W	Northing	Easting	Latitude	Longitude
0.00	0.00	415337.30	795397.80	32° 8' 17.81199 N	103° 22' 44.42084 W

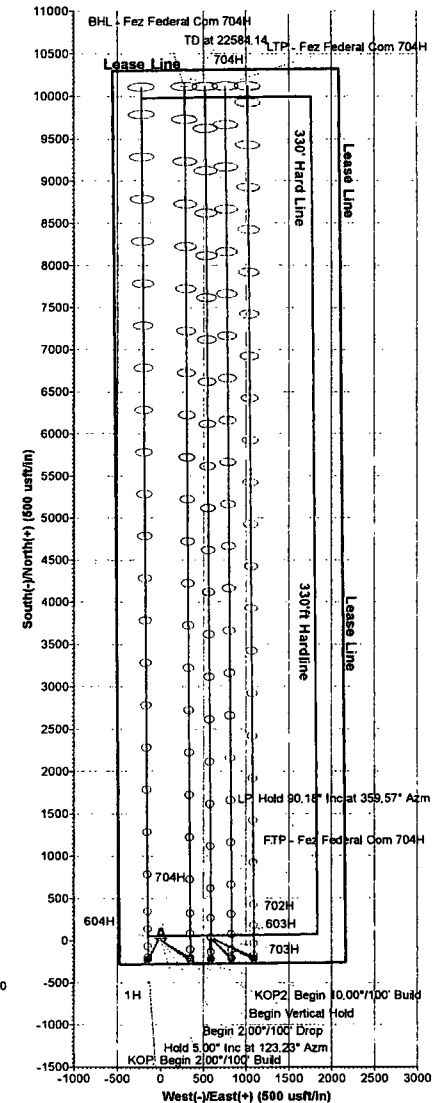
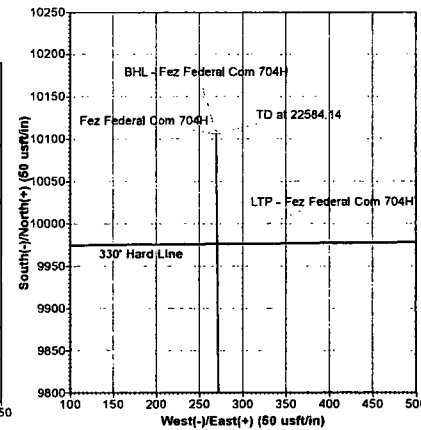
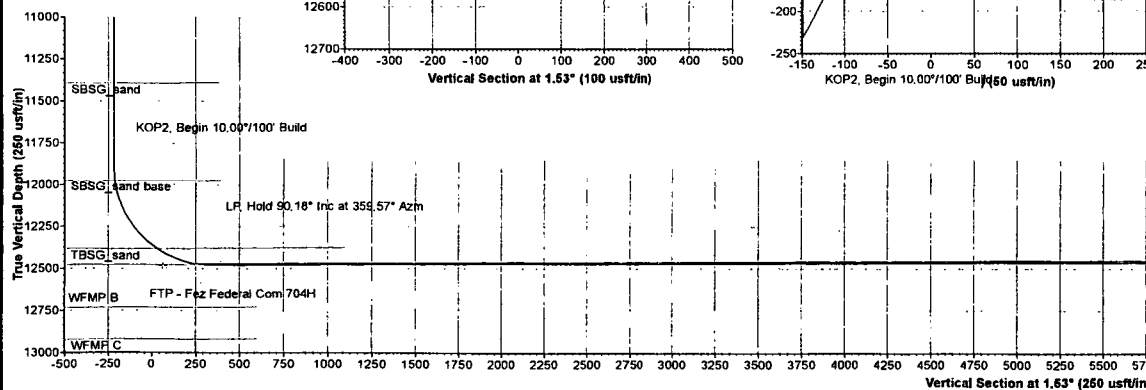
DESIGN TARGET DETAILS					
Name	TVD	+N-S	+E-W	Northing	Easting
BHL - Fez Federal Com 704H 12449.00	10105.00	269.30	425443.20	795869.90	32° 9' 57.78743 N
LTP - Fez Federal Com 704H 12449.40	9975.90	270.30	425313.20	795667.80	32° 8' 56.50099 N
FTP - Fez Federal Com 704H 12479.00	53.00	344.50	415390.30	795742.10	32° 8' 18.30621 N

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Diag	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	0.00
3	1750.06	5.00	123.23	1749.74	-5.98	9.12	2.00	123.23	-5.73	
4	6252.72	5.00	123.23	6235.28	-221.07	337.47	0.00	0.00	-212.00	
5	6502.78	0.00	0.00	6485.00	-227.05	346.59	2.00	180.00	-217.73	
6	11923.82	0.00	0.00	11908.04	-227.05	346.59	0.00	0.00	-217.73	
7	12825.58	90.18	359.57	12479.00	347.65	342.30	10.00	359.57	356.65	
8	22584.14	90.18	359.57	12449.00	10105.90	269.30	0.00	0.00	109.49	BHL - Fez Federal Com 704H

LEGEND	
—	604H, OH, Plan 1 10-12-18 V0
---	Well #5, Wellbore #1, Wellbore #1 V0
---	21H, OH / Job# 61979, Surveys (McVay 8) V0
---	1H, OH, Surveys V0
---	702H, OH, Plan 1 10-12-18 V0
---	603H, OH, Plan 1 10-12-18 V0
---	703H, OH, Plan 1 10-12-18 V0
---	Plan 1 10-12-18

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001
Local Origin: Well 704H, Grid North
Latitude: 32° 8' 17.81199 N
Longitude: 103° 22' 44.42084 W
Grid East: 795397.80
Grid North: 415337.30
Scale Factor: 1.000
Geomagnetic Model: MVHD
Sample Date: 11-Oct-18
Magnetic Declination: 6.68°
Dip Angle from Horizontal: 59.80°
Magnetic Field Strength: 47835.91971529nT
To convert a Magnetic Direction to a Grid Direction, Add 6.17°
To convert a Magnetic Direction to a True Direction, Add 6.68° East
To convert a True Direction to a Grid Direction, Subtract 0.51°

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	DipAngle
871.00	871.00	Rustler	-0.18
1212.00	1212.00	TOS	-0.18
5007.49	5020.26	BOS (Fletcher)	-0.18
5338.54	5352.57	LMAR (Top Delaware)	-0.18
5370.54	5384.70	BLCN	-0.18
6309.68	6327.34	CYCN	-0.18
7769.68	7787.46	BYCN	-0.18
8000.68	8018.46	Bone Sprg	-0.18
9217.68	9235.46	U Avaton	-0.18
9581.68	9599.46	L Avaton	-0.18
10388.68	10416.46	FBSP_sand	-0.18
10918.68	10936.46	SBSG_sand	-0.18
11382.68	11410.46	SBSG_sand	-0.18
11875.67	11893.82	SBSG_sand base	-0.18
12378.90	12460.00	TBSG_sand	-0.18
12468.22	12717.79	WFMP	-0.18





PHOENIX
TECHNOLOGY SERVICES

COG Operating LLC

Lea County, NM (NAD27 NME)

Fez Federal Com

704H

OH

Plan: Plan 1 10-12-18

Standard Planning Report

12 October, 2018



Database: USA Compass
Company: COG Operating LLC
Project: Lea County, NM-(NAD27 NME)
Site: Fez Federal Com
Well: 704H
Wellbore: OH
Design: Plan 1 10-12-18

Local Co-ordinate Reference: Well 704H
TVD Reference: RKB @ 3290.30usft (Scandril Quest)
MD Reference: RKB @ 3290.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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	Fez Federal Com			
Site Position:		Northing:	415,342.20 usft	Latitude: 32° 8' 17.81002 N
From: Map		Easting:	795,972.50 usft	Longitude: 103° 22' 37.73484 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence: 0.51°

Well	704H			
Well Position	+N/-S	-4.90 usft	Northing:	415,337.30 usft
	+E/-W	-574.90 usft	Easting:	795,397.60 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:		Ground Level: 3,260.30 usft

Wellbore	OH					
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength	
			(°)	(°)	(nT)	
	MVHD	10/11/2018	6.68	59.80	47,835.91971529	

Design	Plan 1 10-12-18			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	1.53

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
0.00	0.00	0.00	0.00	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	
1,750.06	5.00	123.23	1,749.74	-5.98	9.12	2.00	2.00	0.00	123.23	
6,252.72	5.00	123.23	6,235.26	-221.07	337.47	0.00	0.00	0.00	0.00	
6,502.78	0.00	0.00	6,485.00	-227.05	346.59	2.00	-2.00	0.00	180.00	
11,923.82	0.00	0.00	11,906.04	-227.05	346.59	0.00	0.00	0.00	0.00	
12,825.58	90.18	359.57	12,479.00	347.65	342.30	10.00	10.00	-0.05	359.57	
22,584.14	90.18	359.57	12,449.00	10,105.90	269.30	0.00	0.00	0.00	0.00	BHL - Fez Federal

Database: USA Compass
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Fez Federal Com
Well: 704H
Wellbore: OH
Design: Plan 1 10-12-18

Local Co-ordinate Reference: Well 704H
TVD Reference: RKB @ 3290.30usft (Scandril Quest)
MD Reference: RKB @ 3290.30usft (Scandril Quest)
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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
871.00	0.00	0.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,212.00	0.00	0.00	1,212.00	0.00	0.00	0.00	0.00	0.00	0.00
TOS									
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 2.00°/100' Build									
1,600.00	2.00	123.23	1,599.98	-0.96	1.46	-0.92	2.00	2.00	0.00
1,700.00	4.00	123.23	1,699.84	-3.82	5.84	-3.67	2.00	2.00	0.00
1,750.06	5.00	123.23	1,749.74	-5.98	9.12	-5.73	2.00	2.00	0.00
Hold 5.00° Inc at 123.23° Azm									
1,800.00	5.00	123.23	1,799.49	-8.36	12.77	-8.02	0.00	0.00	0.00
1,900.00	5.00	123.23	1,899.11	-13.14	20.06	-12.60	0.00	0.00	0.00
2,000.00	5.00	123.23	1,998.73	-17.92	27.35	-17.18	0.00	0.00	0.00
2,100.00	5.00	123.23	2,098.35	-22.69	34.64	-21.76	0.00	0.00	0.00
2,200.00	5.00	123.23	2,197.97	-27.47	41.93	-26.34	0.00	0.00	0.00
2,300.00	5.00	123.23	2,297.59	-32.25	49.23	-30.92	0.00	0.00	0.00
2,400.00	5.00	123.23	2,397.21	-37.02	56.52	-35.51	0.00	0.00	0.00
2,500.00	5.00	123.23	2,496.83	-41.80	63.81	-40.09	0.00	0.00	0.00
2,600.00	5.00	123.23	2,596.45	-46.58	71.10	-44.67	0.00	0.00	0.00
2,700.00	5.00	123.23	2,696.07	-51.36	78.40	-49.25	0.00	0.00	0.00
2,800.00	5.00	123.23	2,795.69	-56.13	85.69	-53.83	0.00	0.00	0.00
2,900.00	5.00	123.23	2,895.30	-60.91	92.98	-58.41	0.00	0.00	0.00
3,000.00	5.00	123.23	2,994.92	-65.69	100.27	-62.99	0.00	0.00	0.00
3,100.00	5.00	123.23	3,094.54	-70.46	107.57	-67.57	0.00	0.00	0.00
3,200.00	5.00	123.23	3,194.16	-75.24	114.86	-72.15	0.00	0.00	0.00
3,300.00	5.00	123.23	3,293.78	-80.02	122.15	-76.74	0.00	0.00	0.00
3,400.00	5.00	123.23	3,393.40	-84.80	129.44	-81.32	0.00	0.00	0.00
3,500.00	5.00	123.23	3,493.02	-89.57	136.73	-85.90	0.00	0.00	0.00
3,600.00	5.00	123.23	3,592.64	-94.35	144.03	-90.48	0.00	0.00	0.00
3,700.00	5.00	123.23	3,692.26	-99.13	151.32	-95.06	0.00	0.00	0.00
3,800.00	5.00	123.23	3,791.88	-103.90	158.61	-99.64	0.00	0.00	0.00
3,900.00	5.00	123.23	3,891.50	-108.68	165.90	-104.22	0.00	0.00	0.00
4,000.00	5.00	123.23	3,991.12	-113.46	173.20	-108.80	0.00	0.00	0.00
4,100.00	5.00	123.23	4,090.74	-118.23	180.49	-113.38	0.00	0.00	0.00
4,200.00	5.00	123.23	4,190.36	-123.01	187.78	-117.97	0.00	0.00	0.00
4,300.00	5.00	123.23	4,289.97	-127.79	195.07	-122.55	0.00	0.00	0.00
4,400.00	5.00	123.23	4,389.59	-132.57	202.37	-127.13	0.00	0.00	0.00
4,500.00	5.00	123.23	4,489.21	-137.34	209.66	-131.71	0.00	0.00	0.00
4,600.00	5.00	123.23	4,588.83	-142.12	216.95	-136.29	0.00	0.00	0.00
4,700.00	5.00	123.23	4,688.45	-146.90	224.24	-140.87	0.00	0.00	0.00
4,800.00	5.00	123.23	4,788.07	-151.67	231.53	-145.45	0.00	0.00	0.00
4,900.00	5.00	123.23	4,887.69	-156.45	238.83	-150.03	0.00	0.00	0.00
5,000.00	5.00	123.23	4,987.31	-161.23	246.12	-154.62	0.00	0.00	0.00
5,020.26	5.00	123.23	5,007.49	-162.20	247.60	-155.54	0.00	0.00	0.00
BOS (Fletcher)									
5,100.00	5.00	123.23	5,086.93	-166.01	253.41	-159.20	0.00	0.00	0.00
5,200.00	5.00	123.23	5,186.55	-170.78	260.70	-163.78	0.00	0.00	0.00
5,300.00	5.00	123.23	5,286.17	-175.56	268.00	-168.36	0.00	0.00	0.00
5,352.57	5.00	123.23	5,338.54	-178.07	271.83	-170.77	0.00	0.00	0.00
LMAR (Top Delaware)									
5,384.70	5.00	123.23	5,370.54	-179.61	274.17	-172.24	0.00	0.00	0.00
BLCN									

Database: USA Compass
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Fez Federal Com
Well: 704H
Wellbore: OH
Design: Plan 1 10-12-18

Local Co-ordinate Reference: Well 704H
TVD Reference: RKB @ 3290.30usft (Scandril Quest)
MD Reference: RKB @ 3290.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.00	5.00	123.23	5,385.79	-180.34	275.29	-172.94	0.00	0.00	0.00
5,500.00	5.00	123.23	5,485.41	-185.11	282.58	-177.52	0.00	0.00	0.00
5,600.00	5.00	123.23	5,585.03	-189.89	289.87	-182.10	0.00	0.00	0.00
5,700.00	5.00	123.23	5,684.64	-194.67	297.16	-186.68	0.00	0.00	0.00
5,800.00	5.00	123.23	5,784.26	-199.45	304.46	-191.26	0.00	0.00	0.00
5,900.00	5.00	123.23	5,883.88	-204.22	311.75	-195.85	0.00	0.00	0.00
6,000.00	5.00	123.23	5,983.50	-209.00	319.04	-200.43	0.00	0.00	0.00
6,100.00	5.00	123.23	6,083.12	-213.78	326.33	-205.01	0.00	0.00	0.00
6,200.00	5.00	123.23	6,182.74	-218.55	333.63	-209.59	0.00	0.00	0.00
6,252.72	5.00	123.23	6,235.26	-221.07	337.47	-212.00	0.00	0.00	0.00
Begin 2.00°/100' Drop									
6,300.00	4.06	123.23	6,282.39	-223.12	340.59	-213.97	2.00	-2.00	0.00
6,327.34	3.51	123.23	6,309.68	-224.11	342.10	-214.91	2.00	-2.00	0.00
CYCN									
6,400.00	2.06	123.23	6,382.24	-226.04	345.05	-216.77	2.00	-2.00	0.00
6,500.00	0.06	123.23	6,482.22	-227.05	346.59	-217.73	2.00	-2.00	0.00
6,502.78	0.00	0.00	6,485.00	-227.05	346.59	-217.73	2.00	-2.00	0.00
Begin Vertical Hold									
7,787.46	0.00	0.00	7,769.68	-227.05	346.59	-217.73	0.00	0.00	0.00
BYCN									
9,018.46	0.00	0.00	9,000.68	-227.05	346.59	-217.73	0.00	0.00	0.00
Bone Sprg									
9,235.46	0.00	0.00	9,217.68	-227.05	346.59	-217.73	0.00	0.00	0.00
U Avalon									
9,599.46	0.00	0.00	9,581.68	-227.05	346.59	-217.73	0.00	0.00	0.00
L Avalon									
10,416.46	0.00	0.00	10,398.68	-227.05	346.59	-217.73	0.00	0.00	0.00
FBSP_sand									
10,936.46	0.00	0.00	10,918.68	-227.05	346.59	-217.73	0.00	0.00	0.00
SBSG_sand									
11,410.46	0.00	0.00	11,392.68	-227.05	346.59	-217.73	0.00	0.00	0.00
SBSG_sand									
11,923.82	0.00	0.00	11,906.04	-227.05	346.59	-217.73	0.00	0.00	0.00
KOP2, Begin 10.00°/100' Build									
11,993.62	6.98	359.57	11,975.67	-222.80	346.56	-213.49	10.00	10.00	0.00
SBSG_sand base									
12,000.00	7.62	359.57	11,982.00	-221.99	346.56	-212.68	10.00	10.00	0.00
12,100.00	17.62	359.57	12,079.46	-200.17	346.39	-190.88	10.00	10.00	0.00
12,200.00	27.62	359.57	12,171.65	-161.76	346.11	-152.49	10.00	10.00	0.00
12,300.00	37.62	359.57	12,255.77	-107.93	345.70	-98.68	10.00	10.00	0.00
12,400.00	47.62	359.57	12,329.27	-40.31	345.20	-31.10	10.00	10.00	0.00
12,480.00	55.62	359.57	12,378.90	22.35	344.73	31.53	10.00	10.00	0.00
TBSG_sand									
12,500.00	57.62	359.57	12,389.90	39.05	344.60	48.22	10.00	10.00	0.00
12,600.00	67.62	359.57	12,435.84	127.73	343.94	136.85	10.00	10.00	0.00
12,700.00	77.62	359.57	12,465.67	223.04	343.23	232.11	10.00	10.00	0.00
12,717.79	79.40	359.57	12,469.22	240.48	343.10	249.53	10.00	10.00	0.00
WFMP									
12,800.00	87.62	359.57	12,478.50	322.08	342.49	331.09	10.00	10.00	0.00
12,825.58	90.18	359.57	12,479.00	347.65	342.30	356.65	10.00	10.00	0.00
LP, Hold 90.18° Inc at 359.57° Azm									
12,900.00	90.18	359.57	12,478.77	422.07	341.74	431.03	0.00	0.00	0.00

Database:	USA Compass	Local Co-ordinate Reference:	Well 704H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3290.30usft (Scandril Quest)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3290.30usft (Scandril Quest)
Site:	Faz Federal Com	North Reference:	Grid
Well:	704H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-12-18		

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)
13,000.00	90.18	359.57	12,478.46	522.07	340.99	530.97	0.00	0.00	0.00
13,100.00	90.18	359.57	12,478.15	622.07	340.24	630.91	0.00	0.00	0.00
13,200.00	90.18	359.57	12,477.84	722.06	339.49	730.85	0.00	0.00	0.00
13,300.00	90.18	359.57	12,477.54	822.06	338.75	830.79	0.00	0.00	0.00
13,400.00	90.18	359.57	12,477.23	922.06	338.00	930.73	0.00	0.00	0.00
13,500.00	90.18	359.57	12,476.92	1,022.05	337.25	1,030.68	0.00	0.00	0.00
13,600.00	90.18	359.57	12,476.62	1,122.05	336.50	1,130.62	0.00	0.00	0.00
13,700.00	90.18	359.57	12,476.31	1,222.05	335.75	1,230.56	0.00	0.00	0.00
13,800.00	90.18	359.57	12,476.00	1,322.04	335.01	1,330.50	0.00	0.00	0.00
13,900.00	90.18	359.57	12,475.69	1,422.04	334.26	1,430.44	0.00	0.00	0.00
14,000.00	90.18	359.57	12,475.39	1,522.04	333.51	1,530.38	0.00	0.00	0.00
14,100.00	90.18	359.57	12,475.08	1,622.03	332.76	1,630.32	0.00	0.00	0.00
14,200.00	90.18	359.57	12,474.77	1,722.03	332.01	1,730.26	0.00	0.00	0.00
14,300.00	90.18	359.57	12,474.46	1,822.03	331.27	1,830.21	0.00	0.00	0.00
14,400.00	90.18	359.57	12,474.16	1,922.02	330.52	1,930.15	0.00	0.00	0.00
14,500.00	90.18	359.57	12,473.85	2,022.02	329.77	2,030.09	0.00	0.00	0.00
14,600.00	90.18	359.57	12,473.54	2,122.02	329.02	2,130.03	0.00	0.00	0.00
14,700.00	90.18	359.57	12,473.23	2,222.02	328.27	2,229.97	0.00	0.00	0.00
14,800.00	90.18	359.57	12,472.93	2,322.01	327.53	2,329.91	0.00	0.00	0.00
14,900.00	90.18	359.57	12,472.62	2,422.01	326.78	2,429.85	0.00	0.00	0.00
15,000.00	90.18	359.57	12,472.31	2,522.01	326.03	2,529.80	0.00	0.00	0.00
15,100.00	90.18	359.57	12,472.00	2,622.00	325.28	2,629.74	0.00	0.00	0.00
15,200.00	90.18	359.57	12,471.70	2,722.00	324.53	2,729.68	0.00	0.00	0.00
15,300.00	90.18	359.57	12,471.39	2,822.00	323.79	2,829.62	0.00	0.00	0.00
15,400.00	90.18	359.57	12,471.08	2,921.99	323.04	2,929.56	0.00	0.00	0.00
15,500.00	90.18	359.57	12,470.77	3,021.99	322.29	3,029.50	0.00	0.00	0.00
15,600.00	90.18	359.57	12,470.47	3,121.99	321.54	3,129.44	0.00	0.00	0.00
15,700.00	90.18	359.57	12,470.16	3,221.98	320.79	3,229.38	0.00	0.00	0.00
15,800.00	90.18	359.57	12,469.85	3,321.98	320.05	3,329.33	0.00	0.00	0.00
15,900.00	90.18	359.57	12,469.55	3,421.98	319.30	3,429.27	0.00	0.00	0.00
16,000.00	90.18	359.57	12,469.24	3,521.97	318.55	3,529.21	0.00	0.00	0.00
16,100.00	90.18	359.57	12,468.93	3,621.97	317.80	3,629.15	0.00	0.00	0.00
16,200.00	90.18	359.57	12,468.62	3,721.97	317.05	3,729.09	0.00	0.00	0.00
16,300.00	90.18	359.57	12,468.32	3,821.96	316.31	3,829.03	0.00	0.00	0.00
16,400.00	90.18	359.57	12,468.01	3,921.96	315.56	3,928.97	0.00	0.00	0.00
16,500.00	90.18	359.57	12,467.70	4,021.96	314.81	4,028.91	0.00	0.00	0.00
16,600.00	90.18	359.57	12,467.39	4,121.95	314.06	4,128.86	0.00	0.00	0.00
16,700.00	90.18	359.57	12,467.09	4,221.95	313.31	4,228.80	0.00	0.00	0.00
16,800.00	90.18	359.57	12,466.78	4,321.95	312.57	4,328.74	0.00	0.00	0.00
16,900.00	90.18	359.57	12,466.47	4,421.94	311.82	4,428.68	0.00	0.00	0.00
17,000.00	90.18	359.57	12,466.16	4,521.94	311.07	4,528.62	0.00	0.00	0.00
17,100.00	90.18	359.57	12,465.86	4,621.94	310.32	4,628.56	0.00	0.00	0.00
17,200.00	90.18	359.57	12,465.55	4,721.93	309.57	4,728.50	0.00	0.00	0.00
17,300.00	90.18	359.57	12,465.24	4,821.93	308.83	4,828.45	0.00	0.00	0.00
17,400.00	90.18	359.57	12,464.93	4,921.93	308.08	4,928.39	0.00	0.00	0.00
17,500.00	90.18	359.57	12,464.63	5,021.92	307.33	5,028.33	0.00	0.00	0.00
17,600.00	90.18	359.57	12,464.32	5,121.92	306.58	5,128.27	0.00	0.00	0.00
17,700.00	90.18	359.57	12,464.01	5,221.92	305.83	5,228.21	0.00	0.00	0.00
17,800.00	90.18	359.57	12,463.71	5,321.91	305.09	5,328.15	0.00	0.00	0.00
17,900.00	90.18	359.57	12,463.40	5,421.91	304.34	5,428.09	0.00	0.00	0.00
18,000.00	90.18	359.57	12,463.09	5,521.91	303.59	5,528.03	0.00	0.00	0.00
18,100.00	90.18	359.57	12,462.78	5,621.90	302.84	5,627.98	0.00	0.00	0.00
18,200.00	90.18	359.57	12,462.48	5,721.90	302.09	5,727.92	0.00	0.00	0.00
18,300.00	90.18	359.57	12,462.17	5,821.90	301.35	5,827.86	0.00	0.00	0.00

Database: USA Compass
 Company: COG Operating LLC
 Project: Lea County, NM (NAD27 NME)
 Site: Fez Federal Com
 Well: 704H
 Wellbore: OH
 Design: Plan 1 10-12-18

Local Co-ordinate Reference: Well 704H
 TVD Reference: RKB @ 3290.30usft (Scandril Quest)
 MD Reference: RKB @ 3290.30usft (Scandril Quest)
 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)
18,400.00	90.18	359.57	12,461.86	5,921.89	300.60	5,927.80	0.00	0.00	0.00
18,500.00	90.18	359.57	12,461.55	6,021.89	299.85	6,027.74	0.00	0.00	0.00
18,600.00	90.18	359.57	12,461.25	6,121.89	299.10	6,127.68	0.00	0.00	0.00
18,700.00	90.18	359.57	12,460.94	6,221.88	298.35	6,227.62	0.00	0.00	0.00
18,800.00	90.18	359.57	12,460.63	6,321.88	297.61	6,327.57	0.00	0.00	0.00
18,900.00	90.18	359.57	12,460.32	6,421.88	296.86	6,427.51	0.00	0.00	0.00
19,000.00	90.18	359.57	12,460.02	6,521.87	296.11	6,527.45	0.00	0.00	0.00
19,100.00	90.18	359.57	12,459.71	6,621.87	295.36	6,627.39	0.00	0.00	0.00
19,200.00	90.18	359.57	12,459.40	6,721.87	294.61	6,727.33	0.00	0.00	0.00
19,300.00	90.18	359.57	12,459.09	6,821.86	293.87	6,827.27	0.00	0.00	0.00
19,400.00	90.18	359.57	12,458.79	6,921.86	293.12	6,927.21	0.00	0.00	0.00
19,500.00	90.18	359.57	12,458.48	7,021.86	292.37	7,027.15	0.00	0.00	0.00
19,600.00	90.18	359.57	12,458.17	7,121.85	291.62	7,127.10	0.00	0.00	0.00
19,700.00	90.18	359.57	12,457.87	7,221.85	290.87	7,227.04	0.00	0.00	0.00
19,800.00	90.18	359.57	12,457.56	7,321.85	290.13	7,326.98	0.00	0.00	0.00
19,900.00	90.18	359.57	12,457.25	7,421.85	289.38	7,426.92	0.00	0.00	0.00
20,000.00	90.18	359.57	12,456.94	7,521.84	288.63	7,526.86	0.00	0.00	0.00
20,100.00	90.18	359.57	12,456.64	7,621.84	287.88	7,626.80	0.00	0.00	0.00
20,200.00	90.18	359.57	12,456.33	7,721.84	287.13	7,726.74	0.00	0.00	0.00
20,300.00	90.18	359.57	12,456.02	7,821.83	286.39	7,826.69	0.00	0.00	0.00
20,400.00	90.18	359.57	12,455.71	7,921.83	285.64	7,926.63	0.00	0.00	0.00
20,500.00	90.18	359.57	12,455.41	8,021.83	284.89	8,026.57	0.00	0.00	0.00
20,600.00	90.18	359.57	12,455.10	8,121.82	284.14	8,126.51	0.00	0.00	0.00
20,700.00	90.18	359.57	12,454.79	8,221.82	283.39	8,226.45	0.00	0.00	0.00
20,800.00	90.18	359.57	12,454.48	8,321.82	282.65	8,326.39	0.00	0.00	0.00
20,900.00	90.18	359.57	12,454.18	8,421.81	281.90	8,426.33	0.00	0.00	0.00
21,000.00	90.18	359.57	12,453.87	8,521.81	281.15	8,526.27	0.00	0.00	0.00
21,100.00	90.18	359.57	12,453.56	8,621.81	280.40	8,626.22	0.00	0.00	0.00
21,200.00	90.18	359.57	12,453.25	8,721.80	279.65	8,726.16	0.00	0.00	0.00
21,300.00	90.18	359.57	12,452.95	8,821.80	278.91	8,826.10	0.00	0.00	0.00
21,400.00	90.18	359.57	12,452.64	8,921.80	278.16	8,926.04	0.00	0.00	0.00
21,500.00	90.18	359.57	12,452.33	9,021.79	277.41	9,025.98	0.00	0.00	0.00
21,600.00	90.18	359.57	12,452.03	9,121.79	276.66	9,125.92	0.00	0.00	0.00
21,700.00	90.18	359.57	12,451.72	9,221.79	275.91	9,225.86	0.00	0.00	0.00
21,800.00	90.18	359.57	12,451.41	9,321.78	275.17	9,325.81	0.00	0.00	0.00
21,900.00	90.18	359.57	12,451.10	9,421.78	274.42	9,425.75	0.00	0.00	0.00
22,000.00	90.18	359.57	12,450.80	9,521.78	273.67	9,525.69	0.00	0.00	0.00
22,100.00	90.18	359.57	12,450.49	9,621.77	272.92	9,625.63	0.00	0.00	0.00
22,200.00	90.18	359.57	12,450.18	9,721.77	272.17	9,725.57	0.00	0.00	0.00
22,300.00	90.18	359.57	12,449.87	9,821.77	271.43	9,825.51	0.00	0.00	0.00
22,400.00	90.18	359.57	12,449.57	9,921.76	270.68	9,925.45	0.00	0.00	0.00
22,500.00	90.18	359.57	12,449.26	10,021.76	269.93	10,025.39	0.00	0.00	0.00
22,584.14	90.18	359.57	12,449.00	10,105.90	269.30	10,109.49	0.00	0.00	0.00

TD at 22584.14

Database:	USA Compass	Local Co-ordinate Reference:	Well 704H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3290.30usft (Scandril Quest)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3290.30usft (Scandril Quest)
Site:	Fez Federal Com	North Reference:	Grid
Well:	704H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-12-18		

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									
BHL - Fez Federal Co	0.00	0.00	12,449.00	10,105.90	269.30	425,443.20	795,666.90	32° 9' 57.78743 N	03° 22' 40.24610 W
- plan hits target center									
- Point									
LTP - Fez Federal Co	0.00	0.00	12,449.40	9,975.90	270.30	425,313.20	795,667.90	32° 9' 56.50098 N	03° 22' 40.24789 W
- plan misses target center by 0.03usft at 22454.14usft MD (12449.40 TVD, 9975.90 N, 270.27 E)									
- Point									
FTP - Fez Federal Co	0.00	0.00	12,479.00	53.00	344.50	415,390.30	795,742.10	32° 8' 18.30621 N	03° 22' 40.40919 W
- plan misses target center by 70.53usft at 12553.43usft MD (12416.37 TVD, 85.44 N, 344.26 E)									
- Point									

Formations

Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
871.00	871.00	Rustler		-0.18	1.53
1,212.00	1,212.00	TOS		-0.18	1.53
5,020.26	5,007.49	BOS (Fletcher)		-0.18	1.53
5,352.57	5,338.54	LMAR (Top Delaware)		-0.18	1.53
5,384.70	5,370.54	BLCN		-0.18	1.53
6,327.34	6,309.68	CYCN		-0.18	1.53
7,787.46	7,769.68	BYCN		-0.18	1.53
9,018.46	9,000.68	Bone Sprg		-0.18	1.53
9,235.46	9,217.68	U Avalon		-0.18	1.53
9,599.46	9,581.68	L Avalon		-0.18	1.53
10,416.46	10,398.68	FBSP_sand		-0.18	1.53
10,936.46	10,918.68	SBSG_sand		-0.18	1.53
11,410.46	11,392.68	SBSG_sand		-0.18	1.53
11,993.62	11,975.67	SBSG_sand base		-0.18	1.53
12,480.00	12,378.90	TBSG_sand		-0.18	1.53
12,717.79	12,469.22	WFMP		-0.18	1.53

Plan Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
1,500.00	1,500.00	0.00	0.00	KOP, Begin 2.00°/100' Build
1,750.06	1,749.74	-5.98	9.12	Hold 5.00° Inc at 123.23° Azm
6,252.72	6,235.26	-221.07	337.47	Begin 2.00°/100' Drop
6,502.78	6,485.00	-227.05	346.59	Begin Vertical Hold
11,923.82	11,906.04	-227.05	346.59	KOP2, Begin 10.00°/100' Build
12,825.58	12,479.00	347.65	342.30	LP, Hold 90.18° Inc at 359.57° Azm
22,584.14	12,449.00	10,105.90	269.30	TD at 22584.14