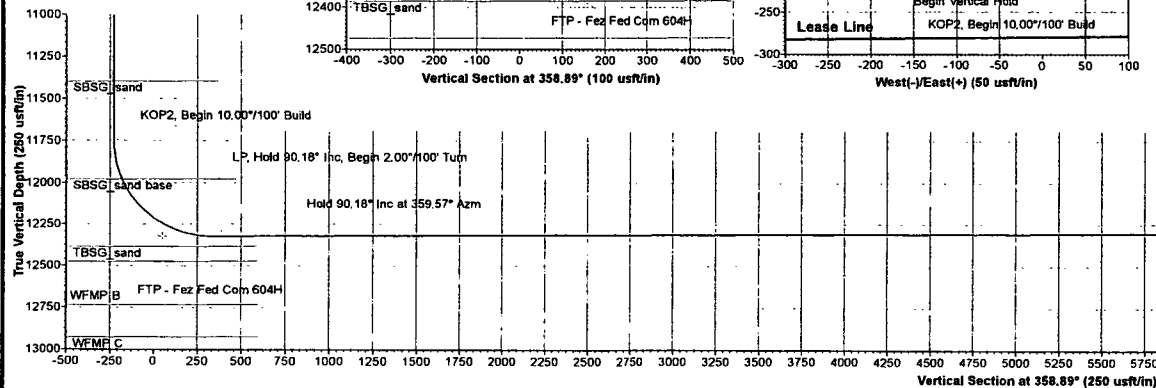
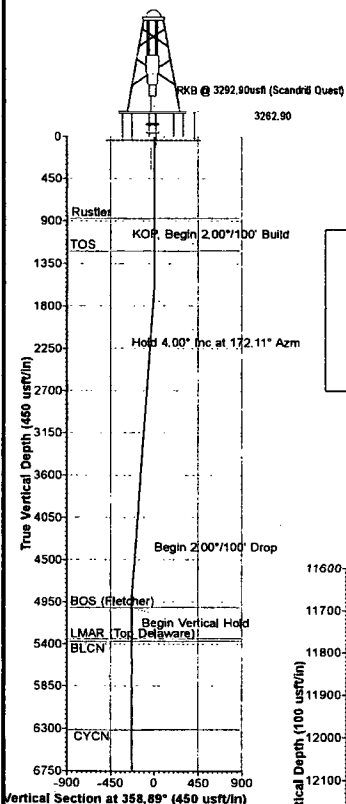




Project: Lea County, NM (NAD27 NME)
Site: Fez Federal Com
Well: 604H
Wellbore: OH
Design: Plan 2 10-16-18
Rig: Scandril Quest



Azimuths to Grid North
True North: -0.51°
Magnetic North: 6.17°
Magnetic Field
Strength: 47835.9nT
Dip Angle: 59.60°
Date: 10/11/2018
Model: MVHD



WELL DETAILS						
+N/S	+E/W	Northing	Easting	Latitude	Longitude	
0.00	0.00	415337.00	795367.60	32° 8' 17.81165 N	103° 22' 44.76974 W	

DESIGN TARGET DETAILS						
Name	TVD	+N/S	+E/W	Northing	Easting	Latitude
BHL - Fez Fed Com 604H	12262.00	10101.80	-195.70	425438.80	795171.90	32° 8' 57.78734 N
LTP - Fez Fed Com 604H	12282.40	9971.55	-184.63	425308.55	795172.87	32° 8' 56.49846 N
FTP - Fez Fed Com 604H	12322.00	49.14	-129.33	415388.14	795247.27	32° 8' 18.30840 N

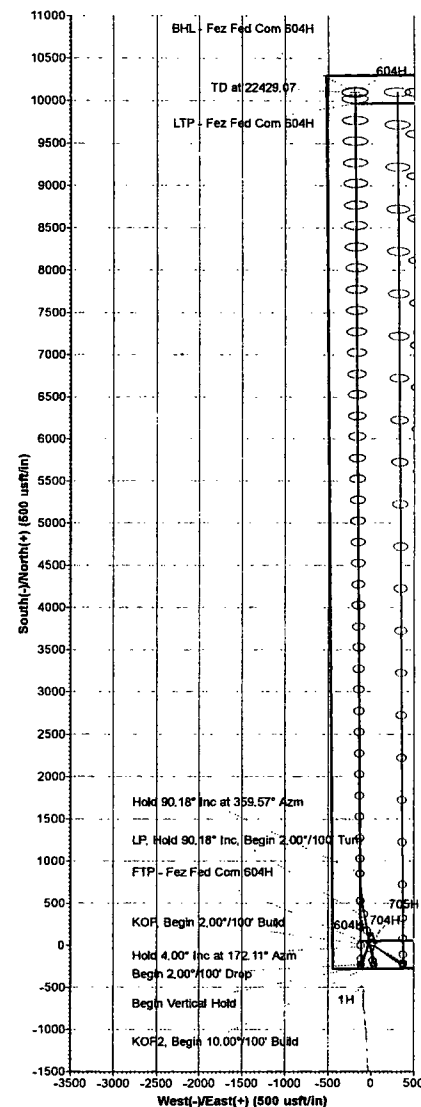
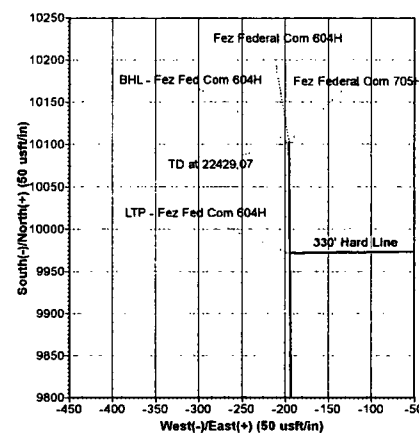
SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	0.00
3	1699.97	4.00	172.11	1699.91	-5.91	0.98	2.00	172.11	46.93	KOP, Begin 2.00°/100' Build
4	4822.96	4.00	172.11	4815.19	-222.68	30.88	0.00	0.00	-223.22	Hold 4.00° Inc at 172.11° Azm
5	5022.93	0.00	0.00	5015.00	-229.57	31.83	2.00	180.00	230.15	Begin Vertical Hold
6	11758.88	0.00	0.00	11749.05	-229.57	31.83	0.00	0.00	-230.15	KOP2, Begin 10.00°/100' Build
7	12658.78	90.18	349.20	12322.00	335.00	-75.97	10.00	349.20	339.41	LP, Hold 90.18° Inc, Begin 2.00°/100' Turn
8	13177.36	90.18	359.57	12320.39	850.39	-126.53	2.00	90.01	852.68	Hold 90.18° Inc at 359.57° Azm
9	22429.07	90.18	359.57	12282.00	10101.80	-195.70	0.00	0.00	103.70	TD at 22429.07

LEGEND

- Well #5, Wellbore #1, Design #1 V0
- 1H, OH, Surveys V0
- 702H, OH, Plan 1 10-12-18 V0
- 603H, OH, Plan 1 10-12-18 V0
- 705H, OH, Plan 1 10-16-18 V0
- 703H, OH, Plan 1 10-12-18 V0
- 704H, OH, Plan 1 10-12-18 V0
- Plan 2 10-16-18

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 604H, Grid North
Latitude: 32° 8' 17.81165 N
Longitude: 103° 22' 44.76974 W
Grid East: 795367.60
Grid North: 415337.00
Scale Factor: 1.000
Geomagnetic Model: MVHD
Sample Date: 11-Oct-18
Magnetic Declination: 6.68°
Dip Angle from Horizontal: 59.60°
Magnetic Field Strength: 47835.88569015nT
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
874.00	874.00	Rustler	-0.18
1215.00	1215.00	TOS	-0.18
5010.72	5018.65	BOS (Fletcher)	-0.18
5341.72	5349.65	LMAR (Top Delaware)	-0.18
5373.72	5381.65	BLCN	-0.18
6312.72	6320.65	CYCN	-0.18
7772.72	7780.65	BYCN	-0.18
8003.72	8011.65	Bone Sprg	-0.18
9220.72	9228.65	U Avaton	-0.18
9584.72	9592.65	L Avaton	-0.18
10401.72	10409.65	FBSG_sand	-0.18
10921.72	10929.65	SBSG_sand	-0.18
11395.72	11403.65	SBSG_sand	-0.18
11978.57	11993.13	SBSG_sand base	-0.18





PHOENIX
TECHNOLOGY SERVICES

COG Operating LLC

Lea County, NM (NAD27 NME)

Fez Federal Com

604H

OH

Plan: Plan 2 10-16-18

Standard Planning Report

16 October, 2018



Database:	USA Compass	Local Co-ordinate Reference:	Well 604H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3292.90usft (Scandril Quest)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3292.90usft (Scandril Quest)
Site:	Fez Federal Com	North Reference:	Grid
Well:	604H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2 10-16-18		

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	604H			
Well Position	+N-S	-5.20 usft	Northing:	415,337.00 usft
	+E-W	-604.90 usft	Easting:	795,367.60 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:		Ground Level: 3,262.90 usft

Wellbore	OH			
Magnetics	Model Name	Sample Date	Declination	Dip Angle
			(°)	(°)
	MVHD	10/11/2018	6.68	59.80
				Field Strength
				(nT)
				47,835.88569015

Design	Plan 2 10-16-18			
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	358.89

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	
1,699.97	4.00	172.11	1,699.81	-6.91	0.96	2.00	2.00	0.00	172.11	
4,822.96	4.00	172.11	4,815.19	-222.66	30.88	0.00	0.00	0.00	0.00	
5,022.93	0.00	0.01	5,015.00	-229.57	31.83	2.00	-2.00	0.00	180.00	
11,756.98	0.00	0.01	11,749.05	-229.57	31.83	0.00	0.00	0.00	0.01	
12,658.78	90.18	349.20	12,322.01	335.00	-75.87	10.00	10.00	0.00	349.20	
13,177.36	90.18	359.57	12,320.39	850.39	-126.53	2.00	0.00	2.00	90.01	
22,429.07	90.18	359.57	12,292.00	10,101.80	-195.70	0.00	0.00	0.00	0.00	BHL - Fez Fed Cor

Database: USA Compass
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Fez Federal Com
Well: 604H
Wellbore: OH
Design: Plan 2 10-16-18

Local Co-ordinate Reference: Well 604H
TVD Reference: RKB @ 3292.90usft (Scandrill Quest)
MD Reference: RKB @ 3292.90usft (Scandrill 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
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
874.00	0.00	0.00	874.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
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
1,215.00	0.00	0.00	1,215.00	0.00	0.00	0.00	0.00	0.00	0.00
TOS									
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
KOP, Begin 2.00°/100' Build									
1,600.00	2.00	172.11	1,599.98	-1.73	0.24	-1.73	2.00	2.00	0.00
1,699.97	4.00	172.11	1,699.81	-6.91	0.96	-6.93	2.00	2.00	0.00
Hold 4.00° Inc at 172.11° Azm									
1,700.00	4.00	172.11	1,699.84	-6.91	0.96	-6.93	0.05	0.05	0.00
1,800.00	4.00	172.11	1,799.59	-13.82	1.92	-13.86	0.00	0.00	0.00
1,900.00	4.00	172.11	1,899.35	-20.73	2.87	-20.78	0.00	0.00	0.00
2,000.00	4.00	172.11	1,999.11	-27.64	3.83	-27.71	0.00	0.00	0.00
2,100.00	4.00	172.11	2,098.86	-34.55	4.79	-34.63	0.00	0.00	0.00
2,200.00	4.00	172.11	2,198.62	-41.45	5.75	-41.56	0.00	0.00	0.00
2,300.00	4.00	172.11	2,298.38	-48.36	6.71	-48.48	0.00	0.00	0.00
2,400.00	4.00	172.11	2,398.13	-55.27	7.66	-55.41	0.00	0.00	0.00
2,500.00	4.00	172.11	2,497.89	-62.18	8.62	-62.34	0.00	0.00	0.00
2,600.00	4.00	172.11	2,597.65	-69.09	9.58	-69.26	0.00	0.00	0.00
2,700.00	4.00	172.11	2,697.40	-76.00	10.54	-76.19	0.00	0.00	0.00
2,800.00	4.00	172.11	2,797.16	-82.91	11.50	-83.11	0.00	0.00	0.00
2,900.00	4.00	172.11	2,896.92	-89.81	12.45	-90.04	0.00	0.00	0.00
3,000.00	4.00	172.11	2,996.67	-96.72	13.41	-96.96	0.00	0.00	0.00
3,100.00	4.00	172.11	3,096.43	-103.63	14.37	-103.89	0.00	0.00	0.00
3,200.00	4.00	172.11	3,196.18	-110.54	15.33	-110.82	0.00	0.00	0.00
3,300.00	4.00	172.11	3,295.94	-117.45	16.29	-117.74	0.00	0.00	0.00
3,400.00	4.00	172.11	3,395.70	-124.36	17.24	-124.67	0.00	0.00	0.00
3,500.00	4.00	172.11	3,495.45	-131.27	18.20	-131.59	0.00	0.00	0.00
3,600.00	4.00	172.11	3,595.21	-138.17	19.16	-138.52	0.00	0.00	0.00
3,700.00	4.00	172.11	3,694.97	-145.08	20.12	-145.45	0.00	0.00	0.00
3,800.00	4.00	172.11	3,794.72	-151.99	21.08	-152.37	0.00	0.00	0.00
3,900.00	4.00	172.11	3,894.48	-158.90	22.03	-159.30	0.00	0.00	0.00
4,000.00	4.00	172.11	3,994.24	-165.81	22.99	-166.22	0.00	0.00	0.00
4,100.00	4.00	172.11	4,093.99	-172.72	23.95	-173.15	0.00	0.00	0.00
4,200.00	4.00	172.11	4,193.75	-179.63	24.91	-180.07	0.00	0.00	0.00
4,300.00	4.00	172.11	4,293.51	-186.53	25.87	-187.00	0.00	0.00	0.00
4,400.00	4.00	172.11	4,393.26	-193.44	26.82	-193.93	0.00	0.00	0.00
4,500.00	4.00	172.11	4,493.02	-200.35	27.78	-200.85	0.00	0.00	0.00
4,600.00	4.00	172.11	4,592.78	-207.26	28.74	-207.78	0.00	0.00	0.00

Database: USA Compass
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Fez Federal Com
Well: 604H
Wellbore: OH
Design: Plan 2 10-16-18

Local Co-ordinate Reference: Well 604H
TVD Reference: RKB @ 3292.90usft (Scandrill Quest)
MD Reference: RKB @ 3292.90usft (Scandrill 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)
4,700.00	4.00	172.11	4,692.53	-214.17	29.70	-214.70	0.00	0.00	0.00
4,800.00	4.00	172.11	4,792.29	-221.08	30.66	-221.63	0.00	0.00	0.00
4,822.96	4.00	172.11	4,815.19	-222.66	30.88	-223.22	0.00	0.00	0.00
Begin 2.00°/100' Drop									
4,900.00	2.46	172.11	4,892.11	-226.96	31.47	-227.53	2.00	-2.00	0.00
5,000.00	0.46	172.11	4,992.07	-229.48	31.82	-230.06	2.00	-2.00	0.00
5,018.65	0.09	172.11	5,010.72	-229.57	31.83	-230.14	2.00	-2.00	0.00
BOS (Fletcher)									
5,022.93	0.00	0.01	5,015.00	-229.57	31.83	-230.15	2.00	-2.00	0.00
Begin Vertical Hold									
5,100.00	0.00	0.00	5,092.07	-229.57	31.83	-230.15	0.00	0.00	0.00
5,200.00	0.00	0.00	5,192.07	-229.57	31.83	-230.15	0.00	0.00	0.00
5,300.00	0.00	0.00	5,292.07	-229.57	31.83	-230.15	0.00	0.00	0.00
5,349.65	0.00	0.00	5,341.72	-229.57	31.83	-230.15	0.00	0.00	0.00
LMAR (Top Delaware)									
5,381.65	0.00	0.00	5,373.72	-229.57	31.83	-230.15	0.00	0.00	0.00
BLCN									
5,400.00	0.00	0.00	5,392.07	-229.57	31.83	-230.15	0.00	0.00	0.00
5,500.00	0.00	0.00	5,492.07	-229.57	31.83	-230.15	0.00	0.00	0.00
5,600.00	0.00	0.00	5,592.07	-229.57	31.83	-230.15	0.00	0.00	0.00
5,700.00	0.00	0.00	5,692.07	-229.57	31.83	-230.15	0.00	0.00	0.00
5,800.00	0.00	0.00	5,792.07	-229.57	31.83	-230.15	0.00	0.00	0.00
5,900.00	0.00	0.00	5,892.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,000.00	0.00	0.00	5,992.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,100.00	0.00	0.00	6,092.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,200.00	0.00	0.00	6,192.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,300.00	0.00	0.00	6,292.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,320.65	0.00	0.00	6,312.72	-229.57	31.83	-230.15	0.00	0.00	0.00
CYCN									
6,400.00	0.00	0.00	6,392.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,500.00	0.00	0.00	6,492.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,600.00	0.00	0.00	6,592.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,700.00	0.00	0.00	6,692.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,800.00	0.00	0.00	6,792.07	-229.57	31.83	-230.15	0.00	0.00	0.00
6,900.00	0.00	0.00	6,892.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,000.00	0.00	0.00	6,992.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,100.00	0.00	0.00	7,092.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,200.00	0.00	0.00	7,192.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,300.00	0.00	0.00	7,292.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,400.00	0.00	0.00	7,392.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,500.00	0.00	0.00	7,492.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,600.00	0.00	0.00	7,592.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,700.00	0.00	0.00	7,692.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,780.65	0.00	0.00	7,772.72	-229.57	31.83	-230.15	0.00	0.00	0.00
BYCN									
7,800.00	0.00	0.00	7,792.07	-229.57	31.83	-230.15	0.00	0.00	0.00
7,900.00	0.00	0.00	7,892.07	-229.57	31.83	-230.15	0.00	0.00	0.00
8,000.00	0.00	0.00	7,992.07	-229.57	31.83	-230.15	0.00	0.00	0.00
8,100.00	0.00	0.00	8,092.07	-229.57	31.83	-230.15	0.00	0.00	0.00
8,200.00	0.00	0.00	8,192.07	-229.57	31.83	-230.15	0.00	0.00	0.00
8,300.00	0.00	0.00	8,292.07	-229.57	31.83	-230.15	0.00	0.00	0.00
8,400.00	0.00	0.00	8,392.07	-229.57	31.83	-230.15	0.00	0.00	0.00
8,500.00	0.00	0.00	8,492.07	-229.57	31.83	-230.15	0.00	0.00	0.00

Database: USA Compass
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Fez Federal Com
Well: 604H
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Design: Plan 2 10-16-18

Local Co-ordinate Reference: Well 604H
TVD Reference: RKB @ 3292.90usft (Scandril Quest)
MD Reference: RKB @ 3292.90usft (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)
8,600.00	0.00	0.00	8,592.07	-229.57	31.83	-230.15	0.00	0.00	0.00
8,700.00	0.00	0.00	8,692.07	-229.57	31.83	-230.15	0.00	0.00	0.00
8,800.00	0.00	0.00	8,792.07	-229.57	31.83	-230.15	0.00	0.00	0.00
8,900.00	0.00	0.00	8,892.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,000.00	0.00	0.00	8,992.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,011.65	0.00	0.00	9,003.72	-229.57	31.83	-230.15	0.00	0.00	0.00
Bone Sprg									
9,100.00	0.00	0.00	9,092.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,200.00	0.00	0.00	9,192.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,228.65	0.00	0.00	9,220.72	-229.57	31.83	-230.15	0.00	0.00	0.00
U Avalon									
9,300.00	0.00	0.00	9,292.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,400.00	0.00	0.00	9,392.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,500.00	0.00	0.00	9,492.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,592.65	0.00	0.00	9,584.72	-229.57	31.83	-230.15	0.00	0.00	0.00
L Avalon									
9,600.00	0.00	0.00	9,592.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,700.00	0.00	0.00	9,692.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,800.00	0.00	0.00	9,792.07	-229.57	31.83	-230.15	0.00	0.00	0.00
9,900.00	0.00	0.00	9,892.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,000.00	0.00	0.00	9,992.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,100.00	0.00	0.00	10,092.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,200.00	0.00	0.00	10,192.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,300.00	0.00	0.00	10,292.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,400.00	0.00	0.00	10,392.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,409.65	0.00	0.00	10,401.72	-229.57	31.83	-230.15	0.00	0.00	0.00
FBSP_sand									
10,500.00	0.00	0.00	10,492.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,600.00	0.00	0.00	10,592.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,700.00	0.00	0.00	10,692.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,800.00	0.00	0.00	10,792.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,900.00	0.00	0.00	10,892.07	-229.57	31.83	-230.15	0.00	0.00	0.00
10,929.65	0.00	0.00	10,921.72	-229.57	31.83	-230.15	0.00	0.00	0.00
SBSG_sand									
11,000.00	0.00	0.00	10,992.07	-229.57	31.83	-230.15	0.00	0.00	0.00
11,100.00	0.00	0.00	11,092.07	-229.57	31.83	-230.15	0.00	0.00	0.00
11,200.00	0.00	0.00	11,192.07	-229.57	31.83	-230.15	0.00	0.00	0.00
11,300.00	0.00	0.00	11,292.07	-229.57	31.83	-230.15	0.00	0.00	0.00
11,400.00	0.00	0.00	11,392.07	-229.57	31.83	-230.15	0.00	0.00	0.00
11,403.65	0.00	0.00	11,395.72	-229.57	31.83	-230.15	0.00	0.00	0.00
SBSG_sand									
11,500.00	0.00	0.00	11,492.07	-229.57	31.83	-230.15	0.00	0.00	0.00
11,600.00	0.00	0.00	11,592.07	-229.57	31.83	-230.15	0.00	0.00	0.00
11,700.00	0.00	0.00	11,692.07	-229.57	31.83	-230.15	0.00	0.00	0.00
11,756.98	0.00	0.00	11,749.05	-229.57	31.83	-230.15	0.00	0.00	0.00
KOP2, Begin 10.00°/100' Build									
11,800.00	4.30	349.20	11,792.03	-227.99	31.53	-228.56	10.00	10.00	0.00
11,900.00	14.30	349.20	11,890.59	-212.13	28.51	-212.64	10.00	10.00	0.00
11,993.13	23.62	349.20	11,978.57	-182.44	22.84	-182.85	10.00	10.00	0.00
SBSG_sand base									
12,000.00	24.30	349.20	11,984.85	-179.70	22.32	-180.10	10.00	10.00	0.00
12,100.00	34.30	349.20	12,071.94	-131.69	13.16	-131.92	10.00	10.00	0.00
12,200.00	44.30	349.20	12,149.23	-69.55	1.31	-69.56	10.00	10.00	0.00

Database: USA Compass
 Company: COG Operating LLC
 Project: Lea County, NM (NAD27 NME)
 Site: Fez Federal Com
 Well: 604H
 Wellbore: OH
 Design: Plan 2 10-16-18

Local Co-ordinate Reference: Well 604H
 TVD Reference: RKB @ 3292.90usft (Scandril Quest)
 MD Reference: RKB @ 3292.90usft (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)
12,300.00	54.30	349.20	12,214.35	4.83	-12.88	5.08	10.00	10.00	0.00
12,400.00	64.30	349.20	12,265.34	89.19	-28.97	89.73	10.00	10.00	0.00
12,500.00	74.30	349.20	12,300.64	180.96	-46.48	181.82	10.00	10.00	0.00
12,600.00	84.30	349.20	12,319.18	277.36	-64.87	278.56	10.00	10.00	0.00
12,658.78	90.18	349.20	12,322.01	335.00	-75.87	336.41	10.00	10.00	0.00
LP, Hold 90.18° Inc, Begin 2.00°/100' Turn									
12,700.00	90.18	350.02	12,321.88	375.55	-83.30	377.09	2.00	0.00	2.00
12,800.00	90.18	352.02	12,321.56	474.32	-98.90	476.14	2.00	0.00	2.00
12,900.00	90.18	354.02	12,321.25	573.57	-111.04	575.62	2.00	0.00	2.00
13,000.00	90.18	356.02	12,320.94	673.19	-119.71	675.38	2.00	0.00	2.00
13,100.00	90.18	358.02	12,320.63	773.05	-124.91	775.32	2.00	0.00	2.00
13,177.36	90.18	359.57	12,320.39	850.39	-126.53	852.68	2.00	0.00	2.00
Hold 90.18° Inc at 359.57° Azm									
13,200.00	90.18	359.57	12,320.32	873.03	-126.70	875.32	0.00	0.00	0.00
13,300.00	90.18	359.57	12,320.01	973.03	-127.44	975.31	0.00	0.00	0.00
13,400.00	90.18	359.57	12,319.71	1,073.02	-128.19	1,075.30	0.00	0.00	0.00
13,500.00	90.18	359.57	12,319.40	1,173.02	-128.94	1,175.30	0.00	0.00	0.00
13,600.00	90.18	359.57	12,319.09	1,273.02	-129.69	1,275.29	0.00	0.00	0.00
13,700.00	90.18	359.57	12,318.79	1,373.01	-130.44	1,375.28	0.00	0.00	0.00
13,800.00	90.18	359.57	12,318.48	1,473.01	-131.18	1,475.27	0.00	0.00	0.00
13,900.00	90.18	359.57	12,318.17	1,573.01	-131.93	1,575.27	0.00	0.00	0.00
14,000.00	90.18	359.57	12,317.87	1,673.00	-132.68	1,675.26	0.00	0.00	0.00
14,100.00	90.18	359.57	12,317.56	1,773.00	-133.43	1,775.25	0.00	0.00	0.00
14,200.00	90.18	359.57	12,317.25	1,873.00	-134.17	1,875.24	0.00	0.00	0.00
14,300.00	90.18	359.57	12,316.95	1,972.99	-134.92	1,975.24	0.00	0.00	0.00
14,400.00	90.18	359.57	12,316.64	2,072.99	-135.67	2,075.23	0.00	0.00	0.00
14,500.00	90.18	359.57	12,316.33	2,172.99	-136.42	2,175.22	0.00	0.00	0.00
14,600.00	90.18	359.57	12,316.02	2,272.98	-137.16	2,275.21	0.00	0.00	0.00
14,700.00	90.18	359.57	12,315.72	2,372.98	-137.91	2,375.21	0.00	0.00	0.00
14,800.00	90.18	359.57	12,315.41	2,472.98	-138.66	2,475.20	0.00	0.00	0.00
14,900.00	90.18	359.57	12,315.10	2,572.97	-139.41	2,575.19	0.00	0.00	0.00
15,000.00	90.18	359.57	12,314.80	2,672.97	-140.16	2,675.18	0.00	0.00	0.00
15,100.00	90.18	359.57	12,314.49	2,772.97	-140.90	2,775.18	0.00	0.00	0.00
15,200.00	90.18	359.57	12,314.18	2,872.96	-141.65	2,875.17	0.00	0.00	0.00
15,300.00	90.18	359.57	12,313.88	2,972.96	-142.40	2,975.16	0.00	0.00	0.00
15,400.00	90.18	359.57	12,313.57	3,072.96	-143.15	3,075.15	0.00	0.00	0.00
15,500.00	90.18	359.57	12,313.26	3,172.95	-143.89	3,175.15	0.00	0.00	0.00
15,600.00	90.18	359.57	12,312.96	3,272.95	-144.64	3,275.14	0.00	0.00	0.00
15,700.00	90.18	359.57	12,312.65	3,372.95	-145.39	3,375.13	0.00	0.00	0.00
15,800.00	90.18	359.57	12,312.34	3,472.94	-146.14	3,475.12	0.00	0.00	0.00
15,900.00	90.18	359.57	12,312.04	3,572.94	-146.88	3,575.12	0.00	0.00	0.00
16,000.00	90.18	359.57	12,311.73	3,672.94	-147.63	3,675.11	0.00	0.00	0.00
16,100.00	90.18	359.57	12,311.42	3,772.93	-148.38	3,775.10	0.00	0.00	0.00
16,200.00	90.18	359.57	12,311.12	3,872.93	-149.13	3,875.09	0.00	0.00	0.00
16,300.00	90.18	359.57	12,310.81	3,972.93	-149.87	3,975.09	0.00	0.00	0.00
16,400.00	90.18	359.57	12,310.50	4,072.92	-150.62	4,075.08	0.00	0.00	0.00
16,500.00	90.18	359.57	12,310.19	4,172.92	-151.37	4,175.07	0.00	0.00	0.00
16,600.00	90.18	359.57	12,309.89	4,272.92	-152.12	4,275.06	0.00	0.00	0.00
16,700.00	90.18	359.57	12,309.58	4,372.91	-152.87	4,375.06	0.00	0.00	0.00
16,800.00	90.18	359.57	12,309.27	4,472.91	-153.61	4,475.05	0.00	0.00	0.00
16,900.00	90.18	359.57	12,308.97	4,572.91	-154.36	4,575.04	0.00	0.00	0.00
17,000.00	90.18	359.57	12,308.66	4,672.91	-155.11	4,675.03	0.00	0.00	0.00
17,100.00	90.18	359.57	12,308.35	4,772.90	-155.86	4,775.03	0.00	0.00	0.00
17,200.00	90.18	359.57	12,308.05	4,872.90	-156.60	4,875.02	0.00	0.00	0.00

Database: USA Compass
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Fez Federal Com
Well: 604H
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Design: Plan 2 10-16-18

Local Co-ordinate Reference: Well 604H
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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)
17,300.00	90.18	359.57	12,307.74	4,972.90	-157.35	4,975.01	0.00	0.00	0.00
17,400.00	90.18	359.57	12,307.43	5,072.89	-158.10	5,075.00	0.00	0.00	0.00
17,500.00	90.18	359.57	12,307.13	5,172.89	-158.85	5,174.99	0.00	0.00	0.00
17,600.00	90.18	359.57	12,306.82	5,272.89	-159.59	5,274.99	0.00	0.00	0.00
17,700.00	90.18	359.57	12,306.51	5,372.88	-160.34	5,374.98	0.00	0.00	0.00
17,800.00	90.18	359.57	12,306.21	5,472.88	-161.09	5,474.97	0.00	0.00	0.00
17,900.00	90.18	359.57	12,305.90	5,572.88	-161.84	5,574.96	0.00	0.00	0.00
18,000.00	90.18	359.57	12,305.59	5,672.87	-162.59	5,674.96	0.00	0.00	0.00
18,100.00	90.18	359.57	12,305.28	5,772.87	-163.33	5,774.95	0.00	0.00	0.00
18,200.00	90.18	359.57	12,304.98	5,872.87	-164.08	5,874.94	0.00	0.00	0.00
18,300.00	90.18	359.57	12,304.67	5,972.86	-164.83	5,974.93	0.00	0.00	0.00
18,400.00	90.18	359.57	12,304.36	6,072.86	-165.58	6,074.93	0.00	0.00	0.00
18,500.00	90.18	359.57	12,304.06	6,172.86	-166.32	6,174.92	0.00	0.00	0.00
18,600.00	90.18	359.57	12,303.75	6,272.85	-167.07	6,274.91	0.00	0.00	0.00
18,700.00	90.18	359.57	12,303.44	6,372.85	-167.82	6,374.90	0.00	0.00	0.00
18,800.00	90.18	359.57	12,303.14	6,472.85	-168.57	6,474.90	0.00	0.00	0.00
18,900.00	90.18	359.57	12,302.83	6,572.84	-169.31	6,574.89	0.00	0.00	0.00
19,000.00	90.18	359.57	12,302.52	6,672.84	-170.06	6,674.88	0.00	0.00	0.00
19,100.00	90.18	359.57	12,302.22	6,772.84	-170.81	6,774.87	0.00	0.00	0.00
19,200.00	90.18	359.57	12,301.91	6,872.83	-171.56	6,874.87	0.00	0.00	0.00
19,300.00	90.18	359.57	12,301.60	6,972.83	-172.30	6,974.86	0.00	0.00	0.00
19,400.00	90.18	359.57	12,301.30	7,072.83	-173.05	7,074.85	0.00	0.00	0.00
19,500.00	90.18	359.57	12,300.99	7,172.82	-173.80	7,174.84	0.00	0.00	0.00
19,600.00	90.18	359.57	12,300.68	7,272.82	-174.55	7,274.84	0.00	0.00	0.00
19,700.00	90.18	359.57	12,300.37	7,372.82	-175.30	7,374.83	0.00	0.00	0.00
19,800.00	90.18	359.57	12,300.07	7,472.81	-176.04	7,474.82	0.00	0.00	0.00
19,900.00	90.18	359.57	12,299.76	7,572.81	-176.79	7,574.81	0.00	0.00	0.00
20,000.00	90.18	359.57	12,299.45	7,672.81	-177.54	7,674.81	0.00	0.00	0.00
20,100.00	90.18	359.57	12,299.15	7,772.80	-178.29	7,774.80	0.00	0.00	0.00
20,200.00	90.18	359.57	12,298.84	7,872.80	-179.03	7,874.79	0.00	0.00	0.00
20,300.00	90.18	359.57	12,298.53	7,972.80	-179.78	7,974.78	0.00	0.00	0.00
20,400.00	90.18	359.57	12,298.23	8,072.79	-180.53	8,074.78	0.00	0.00	0.00
20,500.00	90.18	359.57	12,297.92	8,172.79	-181.28	8,174.77	0.00	0.00	0.00
20,600.00	90.18	359.57	12,297.61	8,272.79	-182.02	8,274.76	0.00	0.00	0.00
20,700.00	90.18	359.57	12,297.31	8,372.78	-182.77	8,374.75	0.00	0.00	0.00
20,800.00	90.18	359.57	12,297.00	8,472.78	-183.52	8,474.75	0.00	0.00	0.00
20,900.00	90.18	359.57	12,296.69	8,572.78	-184.27	8,574.74	0.00	0.00	0.00
21,000.00	90.18	359.57	12,296.39	8,672.77	-185.02	8,674.73	0.00	0.00	0.00
21,100.00	90.18	359.57	12,296.08	8,772.77	-185.76	8,774.72	0.00	0.00	0.00
21,200.00	90.18	359.57	12,295.77	8,872.77	-186.51	8,874.72	0.00	0.00	0.00
21,300.00	90.18	359.57	12,295.47	8,972.76	-187.26	8,974.71	0.00	0.00	0.00
21,400.00	90.18	359.57	12,295.16	9,072.76	-188.01	9,074.70	0.00	0.00	0.00
21,500.00	90.18	359.57	12,294.85	9,172.76	-188.75	9,174.69	0.00	0.00	0.00
21,600.00	90.18	359.57	12,294.54	9,272.75	-189.50	9,274.69	0.00	0.00	0.00
21,700.00	90.18	359.57	12,294.24	9,372.75	-190.25	9,374.68	0.00	0.00	0.00
21,800.00	90.18	359.57	12,293.93	9,472.75	-191.00	9,474.67	0.00	0.00	0.00
21,900.00	90.18	359.57	12,293.62	9,572.75	-191.74	9,574.66	0.00	0.00	0.00
22,000.00	90.18	359.57	12,293.32	9,672.74	-192.49	9,674.66	0.00	0.00	0.00
22,100.00	90.18	359.57	12,293.01	9,772.74	-193.24	9,774.65	0.00	0.00	0.00
22,200.00	90.18	359.57	12,292.70	9,872.74	-193.99	9,874.64	0.00	0.00	0.00
22,300.00	90.18	359.57	12,292.40	9,972.73	-194.73	9,974.63	0.00	0.00	0.00
22,400.00	90.18	359.57	12,292.09	10,072.73	-195.48	10,074.63	0.00	0.00	0.00
22,429.07	90.18	359.57	12,292.00	10,101.80	-195.70	10,103.69	0.00	0.00	0.00

Database:	USA Compass	Local Co-ordinate Reference:	Well 604H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3292.90usft (Scandril Quest)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3292.90usft (Scandril Quest)
Site:	Fez Federal Com	North Reference:	Grid
Well:	604H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2 10-16-18		

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)
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TD at 22429.07

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
BHL - Fez Fed Com 6	0.00	0.00	12,292.00	10,101.80	-195.70	425,438.80	795,171.90	32° 9' 57.78734 N 03° 22' 46.00464 W	
- plan hits target center									
- Point									
LTP - Fez Fed Com 6i	0.00	0.00	12,292.40	9,971.55	-194.63	425,308.55	795,172.97	32° 9' 56.49840 N 03° 22' 46.00560 W	
- plan misses target center by 0.10usft at 22298.82usft MD (12292.40 TVD, 9971.55 N, -194.73 E)									
- Point									
FTP - Fez Fed Com 6	0.00	0.00	12,322.00	49.14	-120.33	415,386.13	795,247.27	32° 8' 18.30840 N 03° 22' 46.16400 W	
- plan misses target center by 114.72usft at 12400.00usft MD (12265.34 TVD, 89.19 N, -28.97 E)									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
874.00	874.00	Rustler		-0.18	358.89
1,215.00	1,215.00	TOS		-0.18	358.89
5,018.65	5,010.72	BOS (Fletcher)		-0.18	358.89
5,349.65	5,341.72	LMAR (Top Delaware)		-0.18	358.89
5,381.65	5,373.72	BLCN		-0.18	358.89
6,320.65	6,312.72	CYCN		-0.18	358.89
7,780.65	7,772.72	BYCN		-0.18	358.89
9,011.65	9,003.72	Bone Sprg		-0.18	358.89
9,228.65	9,220.72	U Avalon		-0.18	358.89
9,592.65	9,584.72	L Avalon		-0.18	358.89
10,409.65	10,401.72	FBSP_sand		-0.18	358.89
10,929.65	10,921.72	SBSG_sand		-0.18	358.89
11,403.65	11,395.72	SBSG_sand		-0.18	358.89
11,993.13	11,978.57	SBSG_sand base		-0.18	358.89

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,500.00	1,500.00	0.00	0.00	KOP, Begin 2.00°/100' Build
1,699.97	1,699.81	-6.91	0.96	Hold 4.00° Inc at 172.11° Azm
4,822.96	4,815.19	-222.66	30.88	Begin 2.00°/100' Drop
5,022.93	5,015.00	-229.57	31.83	Begin Vertical Hold
11,756.98	11,749.05	-229.57	31.83	KOP2, Begin 10.00°/100' Build
12,658.78	12,322.01	335.00	-75.87	LP, Hold 90.18° Inc, Begin 2.00°/100' Turn
13,177.36	12,320.39	850.39	-126.53	Hold 90.18° Inc at 359.57° Azm
22,429.07	12,292.00	10,101.80	-195.70	TD at 22429.07