

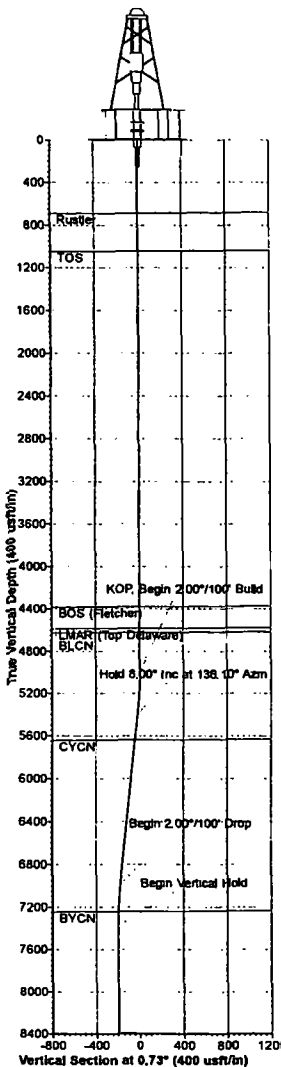


Project: Lea County, NM (NAD27 NME)
 Site: Harrier Federal Com
 Well: 302H
 Wellbore: OH
 Design: Plan 1 08-23-19
 Rig: Pioneer 84



Azimuths to Grid North
 True North: -0.35°
 Magnetic North: 6.25°
 Magnetic Field
 Strength: 4770.9nT
 Dip Angle: 59.67°
 Date: 10/22/2019
 Model: MVHD

RK6 @ 3275.30zst (Pioneer 84)
 Ground Level 3250.30



WELL DETAIL						
3250.30						
+N-S	+E-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	386378.60	712300.90	32° 3' 57.294088 N	103° 38' 52.787134 W	

DESIGN TARGET DETAILS							
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
BHL - Harrier Federal Com 302H	10025.00	10211.80	128.30	328592.50	712430.20	32° 5' 38.381892 N	103° 38' 50.529862 W
LTP - Harrier Federal Com 302H	10025.28	10183.60	129.80	328542.50	712430.50	32° 5' 37.888579 N	103° 38' 50.530062 W
FTP - Harrier Federal Com 302H	10091.00	-273.70	192.80	328104.90	712493.80	32° 3' 54.573448 N	103° 38' 50.565733 W

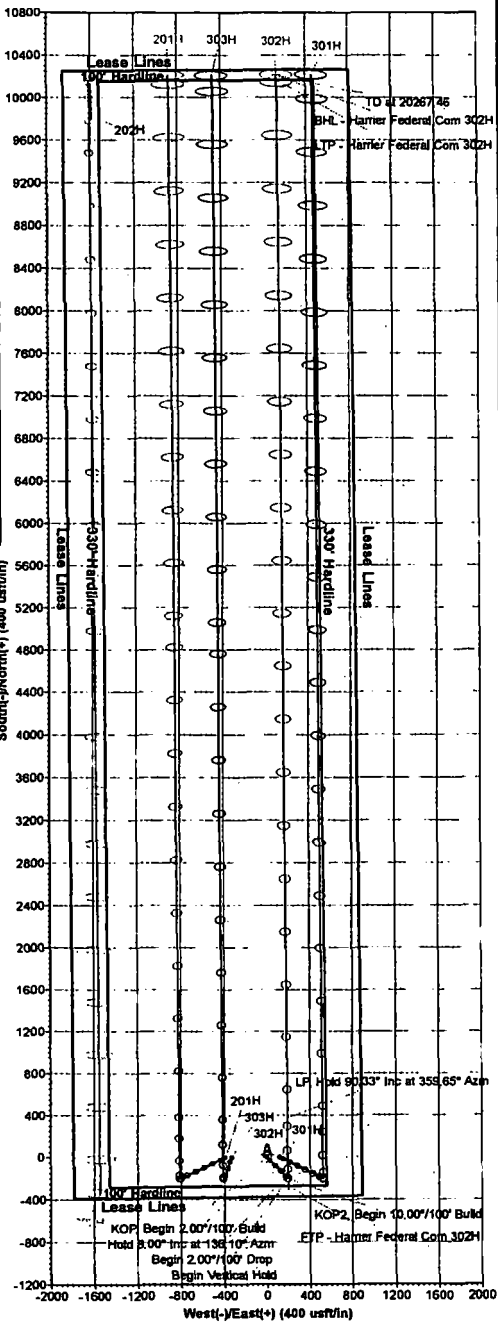
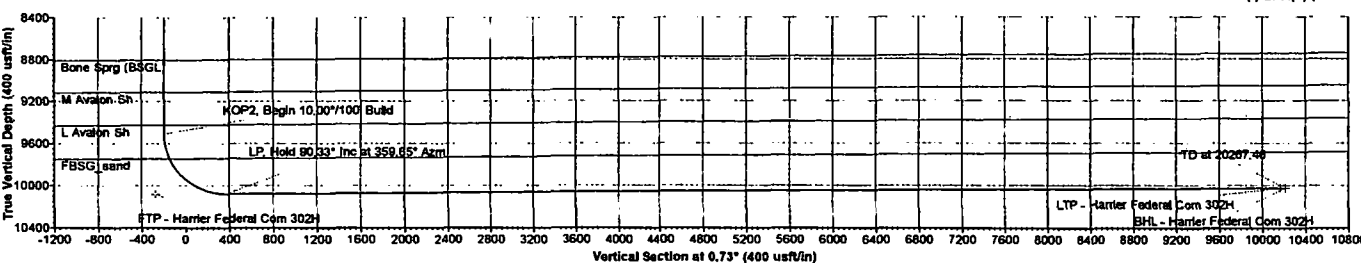
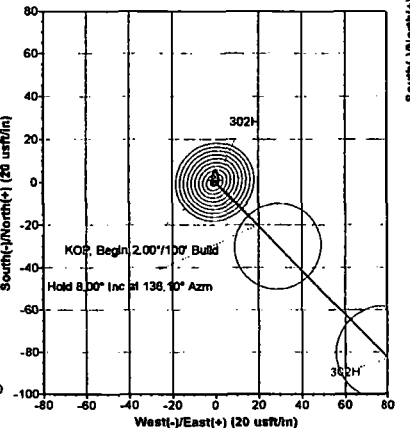
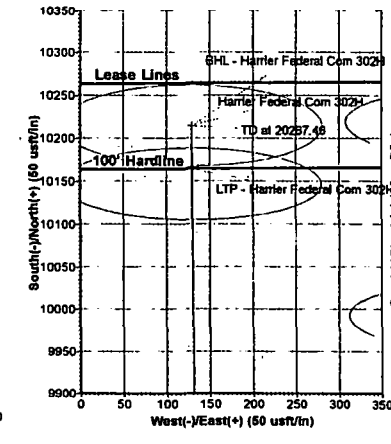
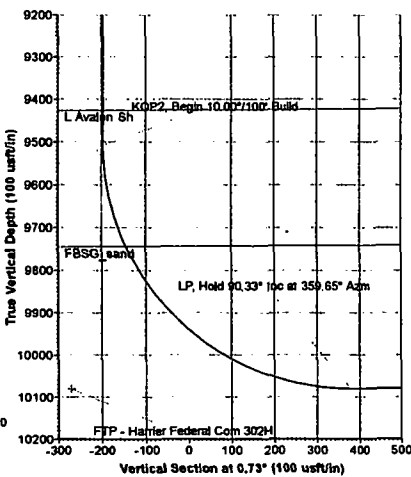
SECTION DETAILS											
Sec	MD	Inc	Azl	TVD	+N-S	+E-W	Dirg	TFace	Vscl	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5000.00	0.00	0.00	5000.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP, Begin 2.00*/100' Build
3	5400.22	8.00	138.10	6398.91	-20.11	19.35	2.00	138.10	-19.88		Hold 8.00' Inc at 138.10° Azm
4	6992.60	0.00	0.00	8975.79	-179.89	173.10	0.00	0.00	-177.88		Begin 2.00*/100' Drop
5	7392.81	0.00	0.00	7374.70	-200.00	192.45	2.00	180.00	-197.55		Begin Vertical Hold
6	9526.16	0.00	0.00	8508.05	-200.00	192.45	0.00	0.00	-197.55		KOP2, Begin 10.00*/100' Build
7	10429.43	80.33	359.85	10081.00	376.21	188.98	10.00	359.85	378.57		LP, Hold 90.33° Inc at 359.85° Azm
8	20267.46	90.33	359.65	10025.00	10211.80	128.30	0.00	0.00	0.00	0.00	TD at 20267.46

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 302H, Grid North
 Latitude: 32° 3' 57.294088 N
 Longitude: 103° 38' 52.787134 W
 Grid East: 712300.80
 Grid North: 386378.60
 Scale Factor: 1.000
 Geomagnetic Model: MVHD
 Sample Date: 22-Oct-19
 Magnetic Declination: 6.62°
 Dip Angle from Horizontal: 59.67°
 Magnetic Field Strength: 4770.489500510nT
 To convert a Magnetic Direction to a Grid Direction, Add 6.25°
 To convert a Magnetic Direction to a True Direction, Add 6.62° East
 To convert a True Direction to a Grid Direction, Subtract 0.36°

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
785.30	685.30	Rustler	-0.33	0.73
1045.30	1045.30	TOS	-0.33	0.73
4382.30	4382.30	BOS Fletcher	-0.33	0.73
4583.30	4583.30	LMAR (Top Delaware)	-0.33	0.73
4821.30	4821.30	BLCH	-0.33	0.73
5638.55	5642.21	CYCN	-0.33	0.73
7243.43	7261.49	BYCN	-0.33	0.73
8807.44	8825.55	Bone Sprg (BSGL)	-0.33	0.73
9116.44	9134.55	M Avalon Sh	-0.33	0.73
9426.44	9444.55	L Avalon Sh	-0.33	0.73
9745.14	9770.60	FBSG_sand	-0.33	0.73

LEGEND

- 301H, OH, Plan 1 08-23-19 V0
- 201H, OH, Plan 1 08-23-19 V0
- 202H, OH, Plan 1 12-27-18 V0
- 303H, OH, Plan 1 08-23-19 V0
- Plan 1 08-23-19





PHOENIX
TECHNOLOGY SERVICES

COG Operating LLC

Lea County, NM (NAD27 NME)

Harrier Federal Com

302H

OH

Plan: Plan 1 08-23-19

Standard Planning Report

23 August, 2019





Planning Report



Database: USA Compass
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Harrier Federal Com
Well: 302H
Wellbore: OH
Design: Plan 1 08-23-19

Local Co-ordinate Reference: Well 302H
TVD Reference: RKB @ 3275.30usft (Pioneer 84)
MD Reference: RKB @ 3275.30usft (Pioneer 84)
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	Harrier Federal Com				
Site Position:		Northing:	398,195.60 usft	Latitude:	32° 5' 34.543518 N
From:	Map	Easting:	710,683.50 usft	Longitude:	103° 39' 10.862860 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.36 °

Well	302H					
Well Position	+N-S	-9,817.00 usft	Northing:	388,378.60 usft	Latitude:	32° 3' 57.294088 N
	+E-W	1,617.40 usft	Easting:	712,300.90 usft	Longitude:	103° 38' 52.787134 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,250.30 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	10/22/2019	6.62	59.67	47,704.89500510

Design	Plan 1 08-23-19				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0.00	0.00	0.00	0.73	

Plan Survey Tool Program	Date 8/23/2019				
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	20,267.46 Plan 1 08-23-19 (OH)	MWD+HRGM OWSG MWD + HRGM		

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	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,400.22	8.00	136.10	5,398.92	-20.11	19.35	2.00	2.00	0.00	136.10	
6,992.60	8.00	136.10	6,975.79	-179.89	173.10	0.00	0.00	0.00	0.00	
7,392.81	0.00	0.00	7,374.70	-200.00	192.45	2.00	-2.00	0.00	180.00	
9,526.16	0.00	0.00	9,508.05	-200.00	192.45	0.00	0.00	0.00	0.00	
10,429.43	90.33	359.65	10,081.00	376.21	188.96	10.00	10.00	-0.04	359.65	
20,267.46	90.33	359.65	10,025.00	10,213.90	129.30	0.00	0.00	0.00	0.00	BHL - Harrier Feder



Database: USA Compass
Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Harrier Federal Com
Well: 302H
Wellbore: OH
Design: Plan 1 08-23-19

Local Co-ordinate Reference: Well 302H
TVD Reference: RKB @ 3275.30usft (Pioneer 84)
MD Reference: RKB @ 3275.30usft (Pioneer 84)
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
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 2.00°/100' Build									
5,100.00	2.00	136.10	5,099.98	-1.26	1.21	-1.24	2.00	2.00	0.00
5,200.00	4.00	136.10	5,199.84	-5.03	4.84	-4.97	2.00	2.00	0.00
5,300.00	6.00	136.10	5,299.45	-11.31	10.88	-11.17	2.00	2.00	0.00
5,400.00	8.00	136.10	5,398.70	-20.09	19.33	-19.84	2.00	2.00	0.00
5,400.22	8.00	136.10	5,398.92	-20.11	19.35	-19.86	2.00	2.00	0.00
Hold 8.00° Inc at 136.10° Azm									
5,500.00	8.00	136.10	5,497.73	-30.12	28.99	-29.75	0.00	0.00	0.00
5,600.00	8.00	136.10	5,596.75	-40.16	38.64	-39.67	0.00	0.00	0.00
5,700.00	8.00	136.10	5,695.78	-50.19	48.30	-49.58	0.00	0.00	0.00
5,800.00	8.00	136.10	5,794.80	-60.23	57.95	-59.49	0.00	0.00	0.00
5,900.00	8.00	136.10	5,893.83	-70.26	67.61	-69.40	0.00	0.00	0.00
6,000.00	8.00	136.10	5,992.86	-80.29	77.26	-79.31	0.00	0.00	0.00
6,100.00	8.00	136.10	6,091.88	-90.33	86.92	-89.22	0.00	0.00	0.00
6,200.00	8.00	136.10	6,190.91	-100.36	96.57	-99.13	0.00	0.00	0.00
6,300.00	8.00	136.10	6,289.93	-110.39	106.23	-109.04	0.00	0.00	0.00
6,400.00	8.00	136.10	6,388.96	-120.43	115.88	-118.95	0.00	0.00	0.00
6,500.00	8.00	136.10	6,487.99	-130.46	125.54	-128.86	0.00	0.00	0.00
6,600.00	8.00	136.10	6,587.01	-140.50	135.19	-138.77	0.00	0.00	0.00
6,700.00	8.00	136.10	6,686.04	-150.53	144.85	-148.68	0.00	0.00	0.00
6,800.00	8.00	136.10	6,785.06	-160.56	154.50	-158.60	0.00	0.00	0.00
6,900.00	8.00	136.10	6,884.09	-170.60	164.16	-168.51	0.00	0.00	0.00
6,992.60	8.00	136.10	6,975.79	-179.89	173.10	-177.68	0.00	0.00	0.00
Begin 2.00°/100' Drop									
7,000.00	7.86	136.10	6,983.12	-180.62	173.81	-178.41	2.00	-2.00	0.00
7,100.00	5.86	136.10	7,082.40	-189.23	182.08	-186.91	2.00	-2.00	0.00
7,200.00	3.86	136.10	7,182.03	-195.33	187.95	-192.93	2.00	-2.00	0.00
7,300.00	1.86	136.10	7,281.90	-198.92	191.41	-196.48	2.00	-2.00	0.00
7,392.81	0.00	0.00	7,374.70	-200.00	192.45	-197.55	2.00	-2.00	0.00
Begin Vertical Hold									
9,526.16	0.00	0.00	9,508.05	-200.00	192.45	-197.55	0.00	0.00	0.00
KOP2, Begin 10.00°/100' Build									
9,600.00	7.38	359.65	9,581.68	-195.25	192.42	-192.80	10.00	10.00	0.00
9,700.00	17.38	359.65	9,679.23	-173.83	192.29	-171.38	10.00	10.00	0.00
9,800.00	27.38	359.65	9,771.58	-135.80	192.06	-133.36	10.00	10.00	0.00
9,900.00	37.38	359.65	9,855.92	-82.31	191.74	-79.88	10.00	10.00	0.00
10,000.00	47.38	359.65	9,929.69	-14.99	191.33	-12.57	10.00	10.00	0.00
10,100.00	57.38	359.65	9,990.65	64.12	190.85	66.53	10.00	10.00	0.00
10,200.00	67.38	359.65	10,036.95	152.61	190.31	155.01	10.00	10.00	0.00
10,300.00	77.38	359.65	10,067.17	247.80	189.73	250.18	10.00	10.00	0.00
10,400.00	87.38	359.65	10,080.41	346.79	189.13	349.16	10.00	10.00	0.00
10,429.43	90.33	359.65	10,081.00	376.21	188.96	378.57	10.00	10.00	0.00
LP, Hold 90.33° Inc at 359.65° Azm									
10,500.00	90.33	359.65	10,080.60	446.78	188.53	449.13	0.00	0.00	0.00
10,600.00	90.33	359.65	10,080.03	546.78	187.92	549.11	0.00	0.00	0.00
10,700.00	90.33	359.65	10,079.46	646.77	187.32	649.09	0.00	0.00	0.00
10,800.00	90.33	359.65	10,078.89	746.77	186.71	749.07	0.00	0.00	0.00
10,900.00	90.33	359.65	10,078.32	846.77	186.10	849.05	0.00	0.00	0.00
11,000.00	90.33	359.65	10,077.75	946.76	185.50	949.03	0.00	0.00	0.00
11,100.00	90.33	359.65	10,077.18	1,046.76	184.89	1,049.02	0.00	0.00	0.00
11,200.00	90.33	359.65	10,076.61	1,146.76	184.28	1,149.00	0.00	0.00	0.00



Planning Report



Database: USA Compass
 Company: COG Operating LLC
 Project: Lea County, NM (NAD27 NME)
 Site: Harrier Federal Com
 Well: 302H
 Wellbore: OH
 Design: Plan 1 08-23-19

Local Co-ordinate Reference: Well 302H
 TVD Reference: RKB @ 3275.30usft (Pioneer 84)
 MD Reference: RKB @ 3275.30usft (Pioneer 84)
 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)
11,300.00	90.33	359.65	10,076.04	1,246.75	183.68	1,248.98	0.00	0.00	0.00
11,400.00	90.33	359.65	10,075.47	1,346.75	183.07	1,348.96	0.00	0.00	0.00
11,500.00	90.33	359.65	10,074.90	1,446.75	182.46	1,448.94	0.00	0.00	0.00
11,600.00	90.33	359.65	10,074.34	1,546.74	181.86	1,548.92	0.00	0.00	0.00
11,700.00	90.33	359.65	10,073.77	1,646.74	181.25	1,648.90	0.00	0.00	0.00
11,800.00	90.33	359.65	10,073.20	1,746.74	180.64	1,748.88	0.00	0.00	0.00
11,900.00	90.33	359.65	10,072.63	1,846.73	180.04	1,848.86	0.00	0.00	0.00
12,000.00	90.33	359.65	10,072.06	1,946.73	179.43	1,948.84	0.00	0.00	0.00
12,100.00	90.33	359.65	10,071.49	2,046.72	178.83	2,048.82	0.00	0.00	0.00
12,200.00	90.33	359.65	10,070.92	2,146.72	178.22	2,148.81	0.00	0.00	0.00
12,300.00	90.33	359.65	10,070.35	2,246.72	177.61	2,248.79	0.00	0.00	0.00
12,400.00	90.33	359.65	10,069.78	2,346.71	177.01	2,348.77	0.00	0.00	0.00
12,500.00	90.33	359.65	10,069.21	2,446.71	176.40	2,448.75	0.00	0.00	0.00
12,600.00	90.33	359.65	10,068.64	2,546.71	175.79	2,548.73	0.00	0.00	0.00
12,700.00	90.33	359.65	10,068.07	2,646.70	175.19	2,648.71	0.00	0.00	0.00
12,800.00	90.33	359.65	10,067.51	2,746.70	174.58	2,748.69	0.00	0.00	0.00
12,900.00	90.33	359.65	10,066.94	2,846.70	173.97	2,848.67	0.00	0.00	0.00
13,000.00	90.33	359.65	10,066.37	2,946.69	173.37	2,948.65	0.00	0.00	0.00
13,100.00	90.33	359.65	10,065.80	3,046.69	172.76	3,048.63	0.00	0.00	0.00
13,200.00	90.33	359.65	10,065.23	3,146.69	172.16	3,148.61	0.00	0.00	0.00
13,300.00	90.33	359.65	10,064.66	3,246.68	171.55	3,248.59	0.00	0.00	0.00
13,400.00	90.33	359.65	10,064.09	3,346.68	170.94	3,348.58	0.00	0.00	0.00
13,500.00	90.33	359.65	10,063.52	3,446.68	170.34	3,448.56	0.00	0.00	0.00
13,600.00	90.33	359.65	10,062.95	3,546.67	169.73	3,548.54	0.00	0.00	0.00
13,700.00	90.33	359.65	10,062.38	3,646.67	169.12	3,648.52	0.00	0.00	0.00
13,800.00	90.33	359.65	10,061.81	3,746.67	168.52	3,748.50	0.00	0.00	0.00
13,900.00	90.33	359.65	10,061.24	3,846.66	167.91	3,848.48	0.00	0.00	0.00
14,000.00	90.33	359.65	10,060.67	3,946.66	167.30	3,948.46	0.00	0.00	0.00
14,100.00	90.33	359.65	10,060.11	4,046.66	166.70	4,048.44	0.00	0.00	0.00
14,200.00	90.33	359.65	10,059.54	4,146.65	166.09	4,148.42	0.00	0.00	0.00
14,300.00	90.33	359.65	10,058.97	4,246.65	165.49	4,248.40	0.00	0.00	0.00
14,400.00	90.33	359.65	10,058.40	4,346.65	164.88	4,348.38	0.00	0.00	0.00
14,500.00	90.33	359.65	10,057.83	4,446.64	164.27	4,448.36	0.00	0.00	0.00
14,600.00	90.33	359.65	10,057.26	4,546.64	163.67	4,548.35	0.00	0.00	0.00
14,700.00	90.33	359.65	10,056.69	4,646.63	163.06	4,648.33	0.00	0.00	0.00
14,800.00	90.33	359.65	10,056.12	4,746.63	162.45	4,748.31	0.00	0.00	0.00
14,900.00	90.33	359.65	10,055.55	4,846.63	161.85	4,848.29	0.00	0.00	0.00
15,000.00	90.33	359.65	10,054.98	4,946.62	161.24	4,948.27	0.00	0.00	0.00
15,100.00	90.33	359.65	10,054.41	5,046.62	160.63	5,048.25	0.00	0.00	0.00
15,200.00	90.33	359.65	10,053.84	5,146.62	160.03	5,148.23	0.00	0.00	0.00
15,300.00	90.33	359.65	10,053.28	5,246.61	159.42	5,248.21	0.00	0.00	0.00
15,400.00	90.33	359.65	10,052.71	5,346.61	158.82	5,348.19	0.00	0.00	0.00
15,500.00	90.33	359.65	10,052.14	5,446.61	158.21	5,448.17	0.00	0.00	0.00
15,600.00	90.33	359.65	10,051.57	5,546.60	157.60	5,548.15	0.00	0.00	0.00
15,700.00	90.33	359.65	10,051.00	5,646.60	157.00	5,648.14	0.00	0.00	0.00
15,800.00	90.33	359.65	10,050.43	5,746.60	156.39	5,748.12	0.00	0.00	0.00
15,900.00	90.33	359.65	10,049.86	5,846.59	155.78	5,848.10	0.00	0.00	0.00
16,000.00	90.33	359.65	10,049.29	5,946.59	155.18	5,948.08	0.00	0.00	0.00
16,100.00	90.33	359.65	10,048.72	6,046.59	154.57	6,048.06	0.00	0.00	0.00
16,200.00	90.33	359.65	10,048.15	6,146.58	153.96	6,148.04	0.00	0.00	0.00
16,300.00	90.33	359.65	10,047.58	6,246.58	153.36	6,248.02	0.00	0.00	0.00
16,400.00	90.33	359.65	10,047.01	6,346.58	152.75	6,348.00	0.00	0.00	0.00
16,500.00	90.33	359.65	10,046.44	6,446.57	152.15	6,447.98	0.00	0.00	0.00
16,600.00	90.33	359.65	10,045.88	6,546.57	151.54	6,547.96	0.00	0.00	0.00



Planning Report



Database: USA Compass
 Company: COG Operating LLC
 Project: Lea County, NM (NAD27 NME)
 Site: Harrier Federal Com
 Well: 302H
 Wellbore: OH
 Design: Plan 1 08-23-19

Local Co-ordinate Reference: Well 302H
 TVD Reference: RKB @ 3275.30usft (Pioneer 84)
 MD Reference: RKB @ 3275.30usft (Pioneer 84)
 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)
16,700.00	90.33	359.65	10,045.31	6,646.57	150.93	6,647.94	0.00	0.00	0.00
16,800.00	90.33	359.65	10,044.74	6,746.56	150.33	6,747.92	0.00	0.00	0.00
16,900.00	90.33	359.65	10,044.17	6,846.56	149.72	6,847.91	0.00	0.00	0.00
17,000.00	90.33	359.65	10,043.60	6,946.56	149.11	6,947.89	0.00	0.00	0.00
17,100.00	90.33	359.65	10,043.03	7,046.55	148.51	7,047.87	0.00	0.00	0.00
17,200.00	90.33	359.65	10,042.46	7,146.55	147.90	7,147.85	0.00	0.00	0.00
17,300.00	90.33	359.65	10,041.89	7,246.54	147.29	7,247.83	0.00	0.00	0.00
17,400.00	90.33	359.65	10,041.32	7,346.54	146.69	7,347.81	0.00	0.00	0.00
17,500.00	90.33	359.65	10,040.75	7,446.54	146.08	7,447.79	0.00	0.00	0.00
17,600.00	90.33	359.65	10,040.18	7,546.53	145.47	7,547.77	0.00	0.00	0.00
17,700.00	90.33	359.65	10,039.61	7,646.53	144.87	7,647.75	0.00	0.00	0.00
17,800.00	90.33	359.65	10,039.05	7,746.53	144.26	7,747.73	0.00	0.00	0.00
17,900.00	90.33	359.65	10,038.48	7,846.52	143.66	7,847.71	0.00	0.00	0.00
18,000.00	90.33	359.65	10,037.91	7,946.52	143.05	7,947.69	0.00	0.00	0.00
18,100.00	90.33	359.65	10,037.34	8,046.52	142.44	8,047.68	0.00	0.00	0.00
18,200.00	90.33	359.65	10,036.77	8,146.51	141.84	8,147.66	0.00	0.00	0.00
18,300.00	90.33	359.65	10,036.20	8,246.51	141.23	8,247.64	0.00	0.00	0.00
18,400.00	90.33	359.65	10,035.63	8,346.51	140.62	8,347.62	0.00	0.00	0.00
18,500.00	90.33	359.65	10,035.06	8,446.50	140.02	8,447.60	0.00	0.00	0.00
18,600.00	90.33	359.65	10,034.49	8,546.50	139.41	8,547.58	0.00	0.00	0.00
18,700.00	90.33	359.65	10,033.92	8,646.50	138.80	8,647.56	0.00	0.00	0.00
18,800.00	90.33	359.65	10,033.35	8,746.49	138.20	8,747.54	0.00	0.00	0.00
18,900.00	90.33	359.65	10,032.78	8,846.49	137.59	8,847.52	0.00	0.00	0.00
19,000.00	90.33	359.65	10,032.21	8,946.49	136.99	8,947.50	0.00	0.00	0.00
19,100.00	90.33	359.65	10,031.65	9,046.48	136.38	9,047.48	0.00	0.00	0.00
19,200.00	90.33	359.65	10,031.08	9,146.48	135.77	9,147.47	0.00	0.00	0.00
19,300.00	90.33	359.65	10,030.51	9,246.48	135.17	9,247.45	0.00	0.00	0.00
19,400.00	90.33	359.65	10,029.94	9,346.47	134.56	9,347.43	0.00	0.00	0.00
19,500.00	90.33	359.65	10,029.37	9,446.47	133.95	9,447.41	0.00	0.00	0.00
19,600.00	90.33	359.65	10,028.80	9,546.47	133.35	9,547.39	0.00	0.00	0.00
19,700.00	90.33	359.65	10,028.23	9,646.46	132.74	9,647.37	0.00	0.00	0.00
19,800.00	90.33	359.65	10,027.66	9,746.46	132.13	9,747.35	0.00	0.00	0.00
19,900.00	90.33	359.65	10,027.09	9,846.46	131.53	9,847.33	0.00	0.00	0.00
20,000.00	90.33	359.65	10,026.52	9,946.45	130.92	9,947.31	0.00	0.00	0.00
20,100.00	90.33	359.65	10,025.95	10,046.45	130.32	10,047.29	0.00	0.00	0.00
20,200.00	90.33	359.65	10,025.38	10,146.44	129.71	10,147.27	0.00	0.00	0.00
20,267.46	90.33	359.65	10,025.00	10,213.90	129.30	10,214.72	0.00	0.00	0.00

TD at 20267.46



Planning Report



Database: USA Compass
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Project: Lea County, NM (NAD27 NME)
Site: Harrier Federal Com
Well: 302H
Wellbore: OH
Design: Plan 1 08-23-19

Local Co-ordinate Reference: Well 302H
TVD Reference: RKB @ 3275.30usft (Pioneer 84)
MD Reference: RKB @ 3275.30usft (Pioneer 84)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL - Harrier Federal - plan hits target center - Point	0.00	0.00	10,025.00	10,213.90	129.30	398,592.50	712,430.20	32° 5' 38.361692 N	3° 38' 50.529852 W
LTP - Harrier Federal - plan misses target center by 17.46usft at 20200.00usft MD (10025.38 TVD, 10146.44 N, 129.71 E) - Point	0.00	0.00	10,025.28	10,163.90	129.60	398,542.50	712,430.50	32° 5' 37.866879 N	3° 38' 50.530062 W
FTP - Harrier Federal - plan misses target center by 291.06usft at 9937.29usft MD (9884.79 TVD, -58.72 N, 191.59 E) - Point	0.00	0.00	10,081.00	-273.70	192.90	388,104.90	712,493.80	32° 3' 54.573446 N	3° 38' 50.565739 W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
685.30	685.30	Rustler		-0.33	0.73
1,045.30	1,045.30	TOS		-0.33	0.73
4,382.30	4,382.30	BOS (Fletcher)		-0.33	0.73
4,583.30	4,583.30	LMAR (Top Delaware)		-0.33	0.73
4,621.30	4,621.30	BLCN		-0.33	0.73
5,642.21	5,638.55	CYCN		-0.33	0.73
7,261.49	7,243.43	BYCN		-0.33	0.73
8,825.55	8,807.44	Bone Sprg (BSGL)		-0.33	0.73
9,134.55	9,116.44	M Avalon Sh		-0.33	0.73
9,444.55	9,426.44	L Avalon Sh		-0.33	0.73
9,770.60	9,745.14	FBSG_sand		-0.33	0.73

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,000.00	5,000.00	0.00	0.00	KOP, Begin 2.00°/100' Build
5,400.22	5,398.92	-20.11	19.35	Hold 8.00° Inc at 136.10° Azm
6,992.60	6,975.79	-179.89	173.10	Begin 2.00°/100' Drop
7,392.81	7,374.70	-200.00	192.45	Begin Vertical Hold
9,526.16	9,508.05	-200.00	192.45	KOP2, Begin 10.00°/100' Build
10,429.43	10,081.00	376.21	188.96	LP, Hold 90.33° Inc at 359.65° Azm
20,267.46	10,025.00	10,213.90	129.30	TD at 20267.46