



COG OPERATING LLC

LEA COUNTY, NM

BULLDOG

WHITE FALCON 16 ST #13H

OWB

Plan: PWP0

Survey Report - Geographic

14 March, 2017



WELL DETAILS: WHITE FALCON 16 ST COM #12H
3258.0

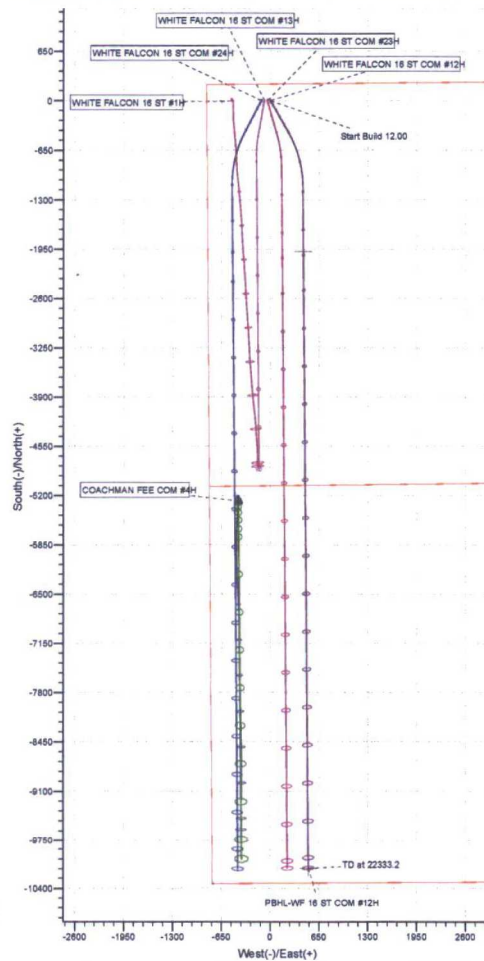
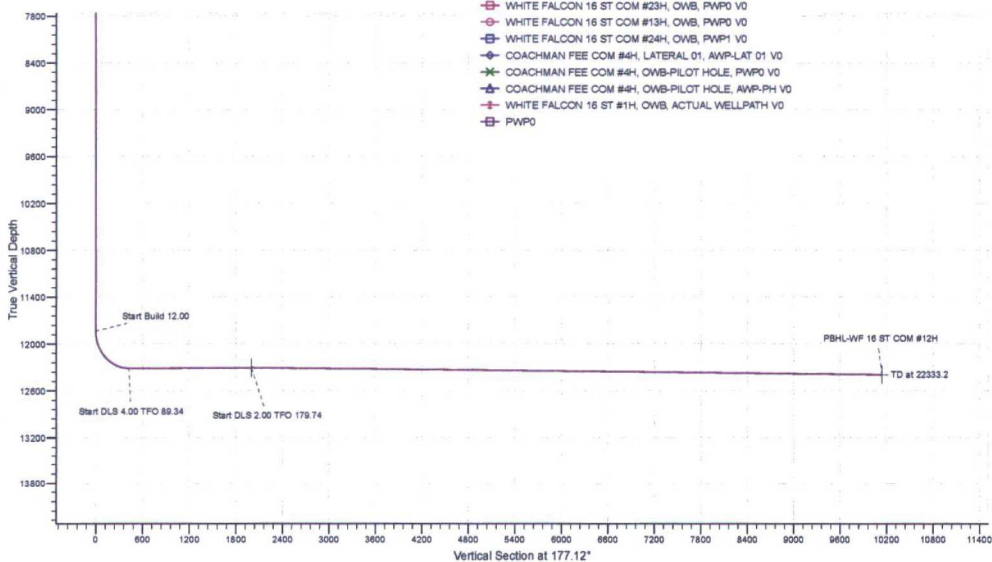
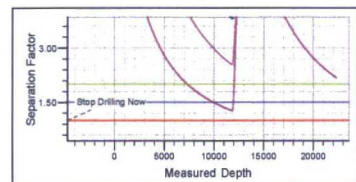
	+N/-S	+E/-W	North	East	Lat	Long	Slot
	0.0	0.0	414634.60	795773.90	32° 8' 12.805 N 103° 22' 40.097 W		

Sec	MD	Inc	Azi	TVD	SECTION DETAILS		Dleg	TFace	VSect	Annotation
					+N/-S	+E/-W				
1	0.0	0.00	0.00	0.0	0.0	0.00	0.00	0.00	0.0	
2	11834.5	0.00	0.00	11834.5	0.0	0.00	0.00	0.00	0.0	
3	12584.6	90.00	150.00	12312.0	-413.5	238.8	12.00	150.00	425.0	
4	13322.0	90.32	179.50	12309.9	-1117.2	430.8	4.00	89.34	1137.4	
5	14185.4	90.32	179.50	12305.0	-1980.5	438.2	0.00	0.00	2000.0	
6	14233.0	89.37	179.50	12305.1	-2028.1	438.6	2.00	179.74	2047.6	
7	22333.2	89.37	179.50	12394.0	-10127.5	509.2	0.00	0.00	10140.3	

Project: LEA COUNTY, NM
Site: BULLDOG
Well: WHITE FALCON 16 ST COM #12H
Wellbore: OWB
Design: PWP0

LEGEND

- WHITE FALCON 16 ST COM #23H, OWB, PWP0 V0
- WHITE FALCON 16 ST COM #13H, OWB, PWP0 V0
- WHITE FALCON 16 ST COM #24H, OWB, PWP1 V0
- COACHMAN FEE COM #4H, LATERAL 01, AWP-LAT 01 V0
- COACHMAN FEE COM #4H, OWB-PILOT HOLE, AWP-PH V0
- WHITE FALCON 16 ST #1H, OWB ACTUAL WELLPATH V0
- PWP0





COG Operating LLC

Survey Report - Geographic

Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Well WHITE FALCON 16 ST #13H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3257+29 @ 3286.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3257+29 @ 3286.0usft (NORAM 23)
Well:	WHITE FALCON 16 ST #13H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	PWP0	Database:	EDM_Users

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	BULLDOG				
Site Position:		Northing:	398,637.10 usft	Latitude:	32° 5' 36.820 N
From:	Map	Easting:	741,887.40 usft	Longitude:	103° 33' 8.116 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.42 °

Well	WHITE FALCON 16 ST #13H					
Well Position	+N/-S	0.0 usft	Northing:	414,833.80 usf	Latitude:	32° 8' 12.804 N
	+E/-W	0.0 usft	Easting:	795,694.00 usf	Longitude:	103° 22' 41.026 W
Position Uncertainty		3.0 usft	Wellhead Elevation:	usf	Ground Level:	3,257.0 usf

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2015	3/13/2017	6.90	60.01	47,924.38241318

Design	PWP0			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	180.81

Survey Tool Program		Date	3/13/2017	
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	11,800.0	PWP0 (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
11,800.0	16,960.2	PWP0 (OWB)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
100.0	0.00	0.00	100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
200.0	0.00	0.00	200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
300.0	0.00	0.00	300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
400.0	0.00	0.00	400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
500.0	0.00	0.00	500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
600.0	0.00	0.00	600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
700.0	0.00	0.00	700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
800.0	0.00	0.00	800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
900.0	0.00	0.00	900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,100.0	0.00	0.00	1,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
1,200.0	0.00	0.00	1,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,100.0	0.00	0.00	2,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,200.0	0.00	0.00	2,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,300.0	0.00	0.00	2,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,400.0	0.00	0.00	2,400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,500.0	0.00	0.00	2,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,600.0	0.00	0.00	2,600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,700.0	0.00	0.00	2,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,800.0	0.00	0.00	2,800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
2,900.0	0.00	0.00	2,900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
3,000.0	0.00	0.00	3,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
3,100.0	0.00	0.00	3,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
3,200.0	0.00	0.00	3,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
3,300.0	0.00	0.00	3,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
3,400.0	0.00	0.00	3,400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
3,500.0	0.00	0.00	3,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
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3,700.0	0.00	0.00	3,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
3,800.0	0.00	0.00	3,800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
3,900.0	0.00	0.00	3,900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
4,000.0	0.00	0.00	4,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
4,100.0	0.00	0.00	4,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
4,200.0	0.00	0.00	4,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
4,300.0	0.00	0.00	4,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
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4,500.0	0.00	0.00	4,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
4,600.0	0.00	0.00	4,600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
4,700.0	0.00	0.00	4,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
4,800.0	0.00	0.00	4,800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
4,900.0	0.00	0.00	4,900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
5,000.0	0.00	0.00	5,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
5,100.0	0.00	0.00	5,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
5,200.0	0.00	0.00	5,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
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5,900.0	0.00	0.00	5,900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
6,000.0	0.00	0.00	6,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
6,100.0	0.00	0.00	6,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
6,200.0	0.00	0.00	6,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
6,300.0	0.00	0.00	6,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
6,400.0	0.00	0.00	6,400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
6,500.0	0.00	0.00	6,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W



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Site:	BULLDOG	MD Reference:	RKB=3257+29 @ 3286.0usft (NORAM 23)
Well:	WHITE FALCON 16 ST #13H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,600.0	0.00	0.00	6,600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
6,700.0	0.00	0.00	6,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
6,800.0	0.00	0.00	6,800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
6,900.0	0.00	0.00	6,900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
7,000.0	0.00	0.00	7,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
7,100.0	0.00	0.00	7,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
7,200.0	0.00	0.00	7,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
7,300.0	0.00	0.00	7,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
7,400.0	0.00	0.00	7,400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
7,500.0	0.00	0.00	7,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
7,600.0	0.00	0.00	7,600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
7,700.0	0.00	0.00	7,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
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7,900.0	0.00	0.00	7,900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
8,000.0	0.00	0.00	8,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
8,100.0	0.00	0.00	8,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
8,200.0	0.00	0.00	8,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
8,300.0	0.00	0.00	8,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
8,400.0	0.00	0.00	8,400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
8,500.0	0.00	0.00	8,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
8,600.0	0.00	0.00	8,600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
8,700.0	0.00	0.00	8,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
8,800.0	0.00	0.00	8,800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
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9,000.0	0.00	0.00	9,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
9,100.0	0.00	0.00	9,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
9,200.0	0.00	0.00	9,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
9,300.0	0.00	0.00	9,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
9,400.0	0.00	0.00	9,400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
9,500.0	0.00	0.00	9,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
9,600.0	0.00	0.00	9,600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
9,700.0	0.00	0.00	9,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
9,800.0	0.00	0.00	9,800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
9,900.0	0.00	0.00	9,900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,000.0	0.00	0.00	10,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,100.0	0.00	0.00	10,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,200.0	0.00	0.00	10,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,300.0	0.00	0.00	10,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,400.0	0.00	0.00	10,400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,500.0	0.00	0.00	10,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,600.0	0.00	0.00	10,600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,700.0	0.00	0.00	10,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,800.0	0.00	0.00	10,800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
10,900.0	0.00	0.00	10,900.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,000.0	0.00	0.00	11,000.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,100.0	0.00	0.00	11,100.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,200.0	0.00	0.00	11,200.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,300.0	0.00	0.00	11,300.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,400.0	0.00	0.00	11,400.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,500.0	0.00	0.00	11,500.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,600.0	0.00	0.00	11,600.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,700.0	0.00	0.00	11,700.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,800.0	0.00	0.00	11,800.0	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,822.5	0.00	0.00	11,822.5	0.0	0.0	414,833.80	795,694.00	32° 8' 12.804 N	103° 22' 41.026 W
11,900.0	9.30	190.10	11,899.7	-6.2	-1.1	414,827.62	795,692.90	32° 8' 12.743 N	103° 22' 41.039 W



COG Operating LLC
Survey Report - Geographic

Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Well WHITE FALCON 16 ST #13H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3257+29 @ 3286.0usft (NORAM 23)
Site:	BULLDOG	MD Reference:	RKB=3257+29 @ 3286.0usft (NORAM 23)
Well:	WHITE FALCON 16 ST #13H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	PWP0	Database:	EDM_Users

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,000.0	21.30	190.10	11,995.9	-32.1	-5.7	414,801.69	795,688.28	32° 8' 12.487 N	103° 22' 41.096 W
12,100.0	33.30	190.10	12,084.6	-77.2	-13.7	414,756.62	795,680.25	32° 8' 12.041 N	103° 22' 41.194 W
12,200.0	45.30	190.10	12,161.9	-139.4	-24.8	414,694.38	795,669.16	32° 8' 11.426 N	103° 22' 41.329 W
12,300.0	57.30	190.10	12,224.3	-216.1	-38.5	414,617.70	795,655.50	32° 8' 10.669 N	103° 22' 41.496 W
12,400.0	69.29	190.10	12,269.2	-303.9	-54.1	414,529.91	795,639.87	32° 8' 9.801 N	103° 22' 41.687 W
12,500.0	81.29	190.10	12,294.5	-398.9	-71.1	414,434.86	795,622.94	32° 8' 8.862 N	103° 22' 41.893 W
12,572.1	89.95	190.10	12,300.0	-469.7	-83.7	414,364.11	795,610.33	32° 8' 8.163 N	103° 22' 42.047 W
12,600.0	89.95	188.99	12,300.0	-497.2	-88.3	414,336.63	795,605.71	32° 8' 7.892 N	103° 22' 42.104 W
12,700.0	89.95	184.99	12,300.1	-596.4	-100.4	414,237.40	795,593.55	32° 8' 6.911 N	103° 22' 42.255 W
12,800.0	89.95	180.99	12,300.2	-696.2	-105.7	414,137.55	795,588.35	32° 8' 5.924 N	103° 22' 42.326 W
12,837.4	89.95	179.49	12,300.2	-733.7	-105.8	414,100.13	795,588.19	32° 8' 5.553 N	103° 22' 42.332 W
12,900.0	89.95	179.49	12,300.3	-796.2	-105.2	414,037.56	795,588.75	32° 8' 4.934 N	103° 22' 42.332 W
13,000.0	89.95	179.49	12,300.4	-896.2	-104.4	413,937.56	795,589.64	32° 8' 3.945 N	103° 22' 42.332 W
13,100.0	89.95	179.49	12,300.5	-996.2	-103.5	413,837.56	795,590.54	32° 8' 2.955 N	103° 22' 42.332 W
13,200.0	89.95	179.49	12,300.6	-1,096.2	-102.6	413,737.57	795,591.43	32° 8' 1.965 N	103° 22' 42.332 W
13,300.0	89.95	179.49	12,300.7	-1,196.2	-101.7	413,637.57	795,592.32	32° 8' 0.976 N	103° 22' 42.332 W
13,400.0	89.95	179.49	12,300.8	-1,296.2	-100.8	413,537.58	795,593.21	32° 7' 59.986 N	103° 22' 42.332 W
13,500.0	89.95	179.49	12,300.8	-1,396.2	-99.9	413,437.58	795,594.11	32° 7' 58.997 N	103° 22' 42.331 W
13,600.0	89.95	179.49	12,300.9	-1,496.2	-99.0	413,337.58	795,595.00	32° 7' 58.007 N	103° 22' 42.331 W
13,700.0	89.95	179.49	12,301.0	-1,596.2	-98.1	413,237.59	795,595.89	32° 7' 57.018 N	103° 22' 42.331 W
13,800.0	89.95	179.49	12,301.1	-1,696.2	-97.2	413,137.59	795,596.79	32° 7' 56.028 N	103° 22' 42.331 W
13,900.0	89.95	179.49	12,301.2	-1,796.2	-96.3	413,037.60	795,597.68	32° 7' 55.039 N	103° 22' 42.331 W
14,000.0	89.95	179.49	12,301.3	-1,896.2	-95.4	412,937.60	795,598.57	32° 7' 54.049 N	103° 22' 42.331 W
14,100.0	89.95	179.49	12,301.4	-1,996.2	-94.5	412,837.60	795,599.46	32° 7' 53.059 N	103° 22' 42.331 W
14,200.0	89.95	179.49	12,301.5	-2,096.2	-93.6	412,737.61	795,600.36	32° 7' 52.070 N	103° 22' 42.331 W
14,300.0	89.95	179.49	12,301.6	-2,196.2	-92.7	412,637.61	795,601.25	32° 7' 51.080 N	103° 22' 42.331 W
14,400.0	89.95	179.49	12,301.7	-2,296.2	-91.9	412,537.62	795,602.14	32° 7' 50.091 N	103° 22' 42.331 W
14,500.0	89.95	179.49	12,301.8	-2,396.2	-91.0	412,437.62	795,603.03	32° 7' 49.101 N	103° 22' 42.331 W
14,600.0	89.95	179.49	12,301.8	-2,496.2	-90.1	412,337.62	795,603.93	32° 7' 48.112 N	103° 22' 42.331 W
14,700.0	89.95	179.49	12,301.9	-2,596.2	-89.2	412,237.63	795,604.82	32° 7' 47.122 N	103° 22' 42.331 W
14,800.0	89.95	179.49	12,302.0	-2,696.2	-88.3	412,137.63	795,605.71	32° 7' 46.133 N	103° 22' 42.331 W
14,900.0	89.95	179.49	12,302.1	-2,796.2	-87.4	412,037.64	795,606.61	32° 7' 45.143 N	103° 22' 42.330 W
15,000.0	89.95	179.49	12,302.2	-2,896.2	-86.5	411,937.64	795,607.50	32° 7' 44.153 N	103° 22' 42.330 W
15,100.0	89.95	179.49	12,302.3	-2,996.2	-85.6	411,837.64	795,608.39	32° 7' 43.164 N	103° 22' 42.330 W
15,200.0	89.95	179.49	12,302.4	-3,096.2	-84.7	411,737.65	795,609.28	32° 7' 42.174 N	103° 22' 42.330 W
15,300.0	89.95	179.49	12,302.5	-3,196.1	-83.8	411,637.65	795,610.18	32° 7' 41.185 N	103° 22' 42.330 W
15,400.0	89.95	179.49	12,302.6	-3,296.1	-82.9	411,537.66	795,611.07	32° 7' 40.195 N	103° 22' 42.330 W
15,500.0	89.95	179.49	12,302.7	-3,396.1	-82.0	411,437.66	795,611.96	32° 7' 39.206 N	103° 22' 42.330 W
15,600.0	89.95	179.49	12,302.8	-3,496.1	-81.1	411,337.66	795,612.85	32° 7' 38.216 N	103° 22' 42.330 W
15,700.0	89.95	179.49	12,302.8	-3,596.1	-80.3	411,237.67	795,613.75	32° 7' 37.227 N	103° 22' 42.330 W
15,800.0	89.95	179.49	12,302.9	-3,696.1	-79.4	411,137.67	795,614.64	32° 7' 36.237 N	103° 22' 42.330 W
15,900.0	89.95	179.49	12,303.0	-3,796.1	-78.5	411,037.68	795,615.53	32° 7' 35.247 N	103° 22' 42.330 W
16,000.0	89.95	179.49	12,303.1	-3,896.1	-77.6	410,937.68	795,616.43	32° 7' 34.258 N	103° 22' 42.330 W
16,100.0	89.95	179.49	12,303.2	-3,996.1	-76.7	410,837.69	795,617.32	32° 7' 33.268 N	103° 22' 42.330 W
16,200.0	89.95	179.49	12,303.3	-4,096.1	-75.8	410,737.69	795,618.21	32° 7' 32.279 N	103° 22' 42.330 W
16,300.0	89.95	179.49	12,303.4	-4,196.1	-74.9	410,637.69	795,619.10	32° 7' 31.289 N	103° 22' 42.329 W
16,400.0	89.95	179.49	12,303.5	-4,296.1	-74.0	410,537.70	795,620.00	32° 7' 30.300 N	103° 22' 42.329 W
16,500.0	89.95	179.49	12,303.6	-4,396.1	-73.1	410,437.70	795,620.89	32° 7' 29.310 N	103° 22' 42.329 W
16,600.0	89.95	179.49	12,303.7	-4,496.1	-72.2	410,337.71	795,621.78	32° 7' 28.321 N	103° 22' 42.329 W
16,700.0	89.95	179.49	12,303.8	-4,596.1	-71.3	410,237.71	795,622.67	32° 7' 27.331 N	103° 22' 42.329 W
16,800.0	89.95	179.49	12,303.9	-4,696.1	-70.4	410,137.71	795,623.57	32° 7' 26.341 N	103° 22' 42.329 W
16,900.0	89.95	179.49	12,303.9	-4,796.1	-69.5	410,037.72	795,624.46	32° 7' 25.352 N	103° 22' 42.329 W
16,960.2	89.95	179.49	12,304.0	-4,856.3	-69.0	409,977.50	795,625.00	32° 7' 24.756 N	103° 22' 42.329 W



COG Operating LLC
Survey Report - Geographic

Company: COG OPERATING LLC
Project: LEA COUNTY, NM
Site: BULLDOG
Well: WHITE FALCON 16 ST #13H
Wellbore: OWB
Design: PWP0

Local Co-ordinate Reference: Well WHITE FALCON 16 ST #13H
TVD Reference: RKB=3257+29 @ 3286.0usft (NORAM 23)
MD Reference: RKB=3257+29 @ 3286.0usft (NORAM 23)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

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									
PBHL-WF 16 ST COM	0.00	0.00	12,304.0	-4,856.3	-69.0	409,977.50	795,625.00	32° 7' 24.756 N	103° 22' 42.329 W
- plan hits target center									
- Point									

Checked By: _____ Approved By: _____ Date: _____