

HOBBS OCD

JAN 09 2017

RECEIVED



CONCHO

+N/-S
0.0

+E/-W
0.0

Northing
570786.19

WELL DETAILS: **BLUE JAY FEDERAL #2H**
Ground Level: 3685.0

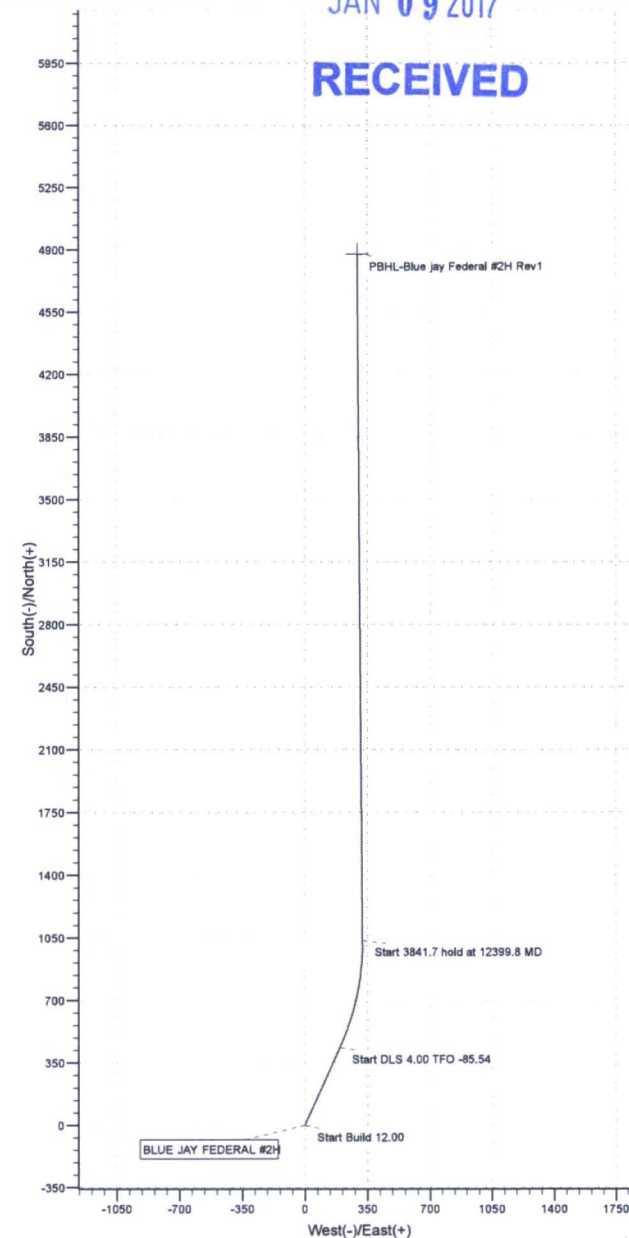
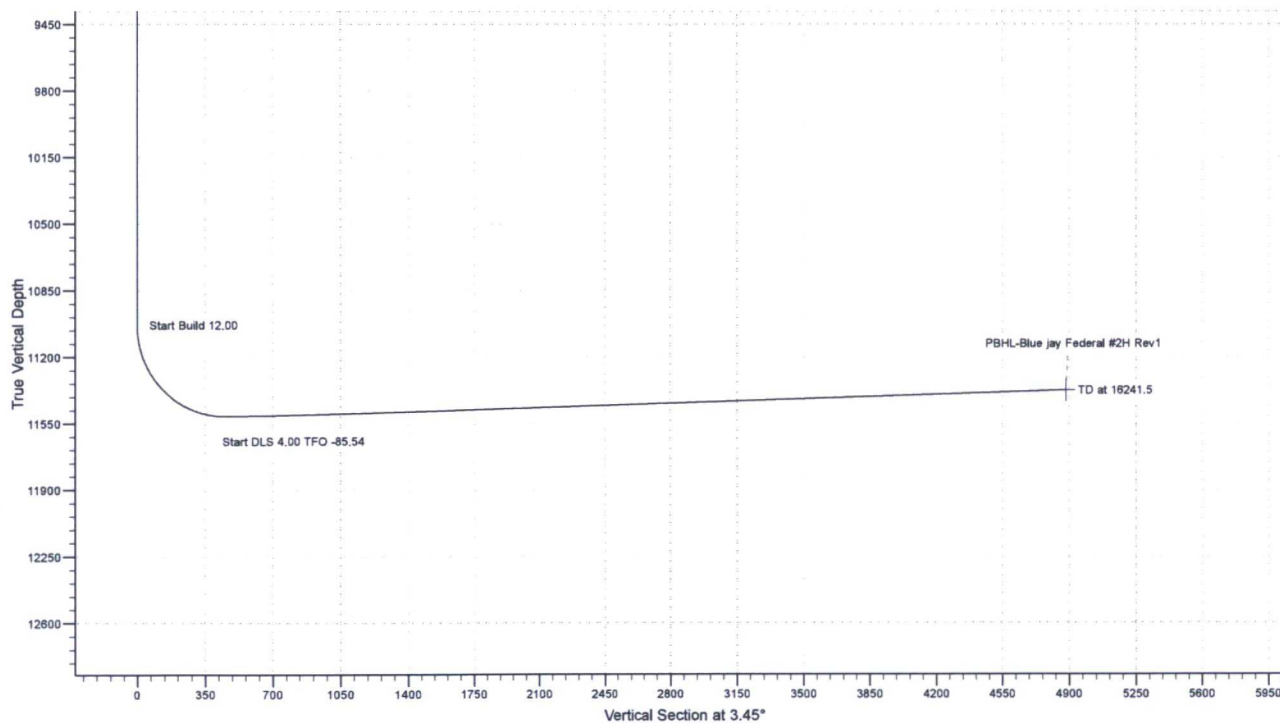
Easting 759910.80 Latitude 32° 33' 58.920 N Longitude 103° 29' 22.859 W

Slot

Sec	MD	Inc	Azi	TVD	SECTION DETAILS					Annotation
					+N/-S	+E/-W	Dleg	TFace	Vsect	
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	11032.5	0.00	0.00	11032.5	0.0	0.0	0.00	0.00	0.0	
3	11782.6	90.00	24.20	11510.0	435.5	195.7	12.00	24.20	446.5	
4	12399.8	91.86	359.58	11499.8	1034.8	321.9	4.00	-85.54	1052.3	
5	16241.5	91.86	359.58	11375.0	4874.4	293.5	0.00	0.00	4883.2	

LEGEND

□ PWP1



COG OPERATING LLC

LEA COUNTY, NM

DEEP BSS

BLUE JAY FEDERAL #2H

OWB

Plan: PWP1

Survey Report - Geographic

27 October, 2016

COG Operating LLC

Survey Report - Geographic

Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Well BLUE JAY FEDERAL #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3685+20 @ 3705.0usft (PATRIOT 2)
Site:	DEEP BSS	MD Reference:	RKB=3685+20 @ 3705.0usft (PATRIOT 2)
Well:	BLUE JAY FEDERAL #2H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	PWP1	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	DEEP BSS		
Site Position:		Northing:	435,807.90 usft
From:	Map	Easting:	713,748.60 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 11' 46.554 N
		Longitude:	103° 38' 32.429 W
		Grid Convergence:	0.37 °

Well	BLUE JAY FEDERAL #2H		
Well Position	+N/-S	0.0 usft	Northing: 570,786.20 usf
	+E/-W	0.0 usft	Easting: 759,910.80 usf
Position Uncertainty	3.0 usft	Wellhead Elevation:	0.0 usf
		Latitude:	32° 33' 58.920 N
		Longitude:	103° 29' 22.859 W
		Ground Level:	3,685.0 usf

Wellbore	OWB		
Magnetics	Model Name	Sample Date	Declination (°)
	WMM2015	10/3/2016	7.03
			Dip Angle (°)
			60.39
			Field Strength (nT)
			48,212

Design	PWP1		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			3.45

Survey Tool Program	Date 10/27/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
0.0	16,241.5	PWP1 (OWB)	Description

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	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
100.0	0.00	0.00	100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
200.0	0.00	0.00	200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
300.0	0.00	0.00	300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
400.0	0.00	0.00	400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
500.0	0.00	0.00	500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
600.0	0.00	0.00	600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
700.0	0.00	0.00	700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
800.0	0.00	0.00	800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
900.0	0.00	0.00	900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W

COG Operating LLC

Survey Report - Geographic

Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Well BLUE JAY FEDERAL #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3685+20 @ 3705.0usft (PATRIOT 2)
Site:	DEEP BSS	MD Reference:	RKB=3685+20 @ 3705.0usft (PATRIOT 2)
Well:	BLUE JAY FEDERAL #2H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	PWP1	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
1,200.0	0.00	0.00	1,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,100.0	0.00	0.00	2,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,200.0	0.00	0.00	2,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,300.0	0.00	0.00	2,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,400.0	0.00	0.00	2,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,500.0	0.00	0.00	2,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,600.0	0.00	0.00	2,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,700.0	0.00	0.00	2,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,800.0	0.00	0.00	2,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
2,900.0	0.00	0.00	2,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,000.0	0.00	0.00	3,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,100.0	0.00	0.00	3,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,200.0	0.00	0.00	3,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,300.0	0.00	0.00	3,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,400.0	0.00	0.00	3,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,500.0	0.00	0.00	3,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,600.0	0.00	0.00	3,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,700.0	0.00	0.00	3,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,800.0	0.00	0.00	3,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
3,900.0	0.00	0.00	3,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,000.0	0.00	0.00	4,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,100.0	0.00	0.00	4,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,200.0	0.00	0.00	4,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,300.0	0.00	0.00	4,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,400.0	0.00	0.00	4,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,500.0	0.00	0.00	4,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,600.0	0.00	0.00	4,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,700.0	0.00	0.00	4,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,800.0	0.00	0.00	4,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
4,900.0	0.00	0.00	4,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,000.0	0.00	0.00	5,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,100.0	0.00	0.00	5,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,200.0	0.00	0.00	5,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,300.0	0.00	0.00	5,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,400.0	0.00	0.00	5,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,500.0	0.00	0.00	5,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,600.0	0.00	0.00	5,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,700.0	0.00	0.00	5,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,800.0	0.00	0.00	5,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
5,900.0	0.00	0.00	5,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
6,000.0	0.00	0.00	6,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
6,100.0	0.00	0.00	6,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
6,200.0	0.00	0.00	6,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
6,300.0	0.00	0.00	6,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
6,400.0	0.00	0.00	6,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
6,500.0	0.00	0.00	6,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W
6,600.0	0.00	0.00	6,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W

COG Operating LLC

Survey Report - Geographic

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Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	PWP1	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	
6,700.0	0.00	0.00	6,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
6,800.0	0.00	0.00	6,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
6,900.0	0.00	0.00	6,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,000.0	0.00	0.00	7,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,100.0	0.00	0.00	7,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,200.0	0.00	0.00	7,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,300.0	0.00	0.00	7,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,400.0	0.00	0.00	7,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,500.0	0.00	0.00	7,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,600.0	0.00	0.00	7,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,700.0	0.00	0.00	7,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,800.0	0.00	0.00	7,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
7,900.0	0.00	0.00	7,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,000.0	0.00	0.00	8,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,100.0	0.00	0.00	8,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,200.0	0.00	0.00	8,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,300.0	0.00	0.00	8,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,400.0	0.00	0.00	8,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,500.0	0.00	0.00	8,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,600.0	0.00	0.00	8,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,800.0	0.00	0.00	8,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
8,900.0	0.00	0.00	8,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,000.0	0.00	0.00	9,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,100.0	0.00	0.00	9,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,200.0	0.00	0.00	9,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,300.0	0.00	0.00	9,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,400.0	0.00	0.00	9,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,500.0	0.00	0.00	9,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,600.0	0.00	0.00	9,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,700.0	0.00	0.00	9,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,800.0	0.00	0.00	9,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
9,900.0	0.00	0.00	9,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,000.0	0.00	0.00	10,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,100.0	0.00	0.00	10,100.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,200.0	0.00	0.00	10,200.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,300.0	0.00	0.00	10,300.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,400.0	0.00	0.00	10,400.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,500.0	0.00	0.00	10,500.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,600.0	0.00	0.00	10,600.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,700.0	0.00	0.00	10,700.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,800.0	0.00	0.00	10,800.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
10,900.0	0.00	0.00	10,900.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
11,000.0	0.00	0.00	11,000.0	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
11,032.5	0.00	0.00	11,032.5	0.0	0.0	570,786.20	759,910.80	32° 33' 58.920 N	103° 29' 22.859 W	
11,100.0	8.10	24.20	11,099.8	4.3	2.0	570,790.54	759,912.75	32° 33' 58.963 N	103° 29' 22.836 W	
11,200.0	20.10	24.20	11,196.6	26.5	11.9	570,812.72	759,922.72	32° 33' 59.182 N	103° 29' 22.717 W	
11,300.0	32.10	24.20	11,286.2	66.6	29.9	570,852.77	759,940.72	32° 33' 59.577 N	103° 29' 22.503 W	
11,400.0	44.10	24.20	11,364.8	122.7	55.2	570,908.94	759,965.96	32° 34' 0.131 N	103° 29' 22.203 W	
11,500.0	56.10	24.20	11,428.8	192.6	86.6	570,978.79	759,997.35	32° 34' 0.819 N	103° 29' 21.830 W	
11,600.0	68.09	24.20	11,475.5	273.1	122.7	571,059.25	760,033.51	32° 34' 1.612 N	103° 29' 21.400 W	
11,700.0	80.09	24.20	11,502.9	360.6	162.1	571,146.81	760,072.86	32° 34' 2.476 N	103° 29' 20.932 W	
11,782.6	90.00	24.20	11,510.0	435.5	195.7	571,221.73	760,106.54	32° 34' 3.214 N	103° 29' 20.531 W	
11,800.0	90.05	23.50	11,510.0	451.5	202.8	571,237.69	760,113.59	32° 34' 3.372 N	103° 29' 20.448 W	
11,900.0	90.36	19.52	11,509.6	544.5	239.5	571,330.70	760,150.25	32° 34' 4.289 N	103° 29' 20.011 W	

COG Operating LLC

Survey Report - Geographic

Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Well BLUE JAY FEDERAL #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3685+20 @ 3705.0usft (PATRIOT 2)
Site:	DEEP BSS	MD Reference:	RKB=3685+20 @ 3705.0usft (PATRIOT 2)
Well:	BLUE JAY FEDERAL #2H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	PWP1	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	90.67	15.53	11,508.7	639.8	269.6	571,426.04	760,180.35	32° 34' 5.230 N		103° 29' 19.650 W
12,100.0	90.98	11.54	11,507.3	737.0	292.9	571,523.23	760,203.74	32° 34' 6.190 N		103° 29' 19.368 W
12,200.0	91.28	7.55	11,505.3	835.6	309.5	571,621.81	760,220.32	32° 34' 7.164 N		103° 29' 19.165 W
12,300.0	91.58	3.56	11,502.8	935.1	319.2	571,721.29	760,229.99	32° 34' 8.148 N		103° 29' 19.043 W
12,399.8	91.86	359.58	11,499.8	1,034.8	321.9	571,820.99	760,232.72	32° 34' 9.134 N		103° 29' 19.001 W
12,400.0	91.86	359.58	11,499.8	1,035.0	321.9	571,821.19	760,232.72	32° 34' 9.136 N		103° 29' 19.001 W
12,500.0	91.86	359.58	11,496.6	1,134.9	321.2	571,921.13	760,231.98	32° 34' 10.125 N		103° 29' 19.001 W
12,600.0	91.86	359.58	11,493.3	1,234.9	320.4	572,021.08	760,231.24	32° 34' 11.114 N		103° 29' 19.000 W
12,700.0	91.86	359.58	11,490.1	1,334.8	319.7	572,121.02	760,230.50	32° 34' 12.103 N		103° 29' 19.000 W
12,800.0	91.86	359.58	11,486.8	1,434.8	319.0	572,220.96	760,229.76	32° 34' 13.092 N		103° 29' 18.999 W
12,900.0	91.86	359.58	11,483.6	1,534.7	318.2	572,320.91	760,229.02	32° 34' 14.081 N		103° 29' 18.998 W
13,000.0	91.86	359.58	11,480.3	1,634.7	317.5	572,420.85	760,228.28	32° 34' 15.070 N		103° 29' 18.998 W
13,100.0	91.86	359.58	11,477.1	1,734.6	316.7	572,520.80	760,227.54	32° 34' 16.059 N		103° 29' 18.997 W
13,200.0	91.86	359.58	11,473.8	1,834.5	316.0	572,620.74	760,226.80	32° 34' 17.048 N		103° 29' 18.996 W
13,300.0	91.86	359.58	11,470.6	1,934.5	315.3	572,720.69	760,226.06	32° 34' 18.037 N		103° 29' 18.996 W
13,400.0	91.86	359.58	11,467.3	2,034.4	314.5	572,820.63	760,225.32	32° 34' 19.026 N		103° 29' 18.995 W
13,500.0	91.86	359.58	11,464.1	2,134.4	313.8	572,920.58	760,224.58	32° 34' 20.015 N		103° 29' 18.995 W
13,600.0	91.86	359.58	11,460.8	2,234.3	313.0	573,020.52	760,223.84	32° 34' 21.004 N		103° 29' 18.994 W
13,700.0	91.86	359.58	11,457.6	2,334.3	312.3	573,120.46	760,223.10	32° 34' 21.993 N		103° 29' 18.993 W
13,800.0	91.86	359.58	11,454.3	2,434.2	311.6	573,220.41	760,222.36	32° 34' 22.982 N		103° 29' 18.993 W
13,900.0	91.86	359.58	11,451.1	2,534.2	310.8	573,320.35	760,221.62	32° 34' 23.971 N		103° 29' 18.992 W
14,000.0	91.86	359.58	11,447.8	2,634.1	310.1	573,420.30	760,220.88	32° 34' 24.960 N		103° 29' 18.991 W
14,100.0	91.86	359.58	11,444.6	2,734.0	309.3	573,520.24	760,220.14	32° 34' 25.949 N		103° 29' 18.991 W
14,200.0	91.86	359.58	11,441.3	2,834.0	308.6	573,620.19	760,219.40	32° 34' 26.938 N		103° 29' 18.990 W
14,300.0	91.86	359.58	11,438.1	2,933.9	307.9	573,720.13	760,218.66	32° 34' 27.927 N		103° 29' 18.990 W
14,400.0	91.86	359.58	11,434.8	3,033.9	307.1	573,820.08	760,217.92	32° 34' 28.916 N		103° 29' 18.989 W
14,500.0	91.86	359.58	11,431.6	3,133.8	306.4	573,920.02	760,217.18	32° 34' 29.905 N		103° 29' 18.988 W
14,600.0	91.86	359.58	11,428.3	3,233.8	305.6	574,019.96	760,216.44	32° 34' 30.894 N		103° 29' 18.988 W
14,700.0	91.86	359.58	11,425.1	3,333.7	304.9	574,119.91	760,215.70	32° 34' 31.883 N		103° 29' 18.987 W
14,800.0	91.86	359.58	11,421.8	3,433.7	304.2	574,219.85	760,214.96	32° 34' 32.872 N		103° 29' 18.986 W
14,900.0	91.86	359.58	11,418.6	3,533.6	303.4	574,319.80	760,214.22	32° 34' 33.861 N		103° 29' 18.986 W
15,000.0	91.86	359.58	11,415.3	3,633.5	302.7	574,419.74	760,213.48	32° 34' 34.850 N		103° 29' 18.985 W
15,100.0	91.86	359.58	11,412.1	3,733.5	301.9	574,519.69	760,212.74	32° 34' 35.839 N		103° 29' 18.985 W
15,200.0	91.86	359.58	11,408.8	3,833.4	301.2	574,619.63	760,212.00	32° 34' 36.828 N		103° 29' 18.984 W
15,300.0	91.86	359.58	11,405.6	3,933.4	300.5	574,719.58	760,211.26	32° 34' 37.817 N		103° 29' 18.983 W
15,400.0	91.86	359.58	11,402.3	4,033.3	299.7	574,819.52	760,210.52	32° 34' 38.806 N		103° 29' 18.983 W
15,500.0	91.86	359.58	11,399.1	4,133.3	299.0	574,919.46	760,209.78	32° 34' 39.794 N		103° 29' 18.982 W
15,600.0	91.86	359.58	11,395.8	4,233.2	298.2	575,019.41	760,209.04	32° 34' 40.783 N		103° 29' 18.981 W
15,700.0	91.86	359.58	11,392.6	4,333.2	297.5	575,119.35	760,208.30	32° 34' 41.772 N		103° 29' 18.981 W
15,800.0	91.86	359.58	11,389.3	4,433.1	296.8	575,219.30	760,207.56	32° 34' 42.761 N		103° 29' 18.980 W
15,900.0	91.86	359.58	11,386.1	4,533.0	296.0	575,319.24	760,206.82	32° 34' 43.750 N		103° 29' 18.980 W
16,000.0	91.86	359.58	11,382.8	4,633.0	295.3	575,419.19	760,206.08	32° 34' 44.739 N		103° 29' 18.979 W
16,100.0	91.86	359.58	11,379.6	4,732.9	294.5	575,519.13	760,205.34	32° 34' 45.728 N		103° 29' 18.978 W
16,200.0	91.86	359.58	11,376.3	4,832.9	293.8	575,619.08	760,204.60	32° 34' 46.717 N		103° 29' 18.978 W
16,241.5	91.86	359.58	11,375.0	4,874.4	293.5	575,660.60	760,204.30	32° 34' 47.128 N		103° 29' 18.977 W

COG Operating LLC

Survey Report - Geographic

Company:	COG OPERATING LLC	Local Co-ordinate Reference:	Well BLUE JAY FEDERAL #2H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3685+20 @ 3705.0usft (PATRIOT 2)
Site:	DEEP BSS	MD Reference:	RKB=3685+20 @ 3705.0usft (PATRIOT 2)
Well:	BLUE JAY FEDERAL #2H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	PWP1	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-Blue jay Federal	0.00	0.00	11,375.0	4,874.4	293.5	575,660.60	760,204.30	32° 34' 47.128 N	103° 29' 18.977 W
- plan hits target center									
- Point									

Checked By: _____ Approved By: _____ Date: _____



WELL DETAILS: **BLUE JAY FEDERAL #2H**

+N/-S 0.0 +E/-W 0.0 Northing 570786.19 Ground Level: 3685.0 Easting 759910.80 Latitude 32° 33' 58.920 N Longitude 103° 29' 22.859 W Slot

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	11032.5	0.00	0.00	11032.5	0.0	0.0	0.00	0.00	0.0
3	11782.6	90.00	24.20	11510.0	435.5	195.7	12.00	24.20	446.5
4	12399.8	91.86	359.58	11499.8	1034.8	321.9	4.00	-85.54	1052.3
5	16241.5	91.86	359.58	11375.0	4874.4	293.5	0.00	0.00	4883.2

LEGEND

PWP1

