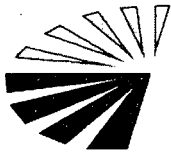


30-025-45254



C O N C H O

HOBBS OCD
OCT 12 2018
RECEIVED

COG Operating L L C

Lea County, NM (NAD27 NME)

Sec. 22, T 21 S. , R 34 E

Lychee State Com #3H

Wellbore #1

Plan: Plan #1

Standard Survey Report

10 October, 2018



INTEGRITY
DIRECTIONAL

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Lychee State Com #3H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=30 @ 3739.30usft (Nabors 894)
Site:	Sec. 22, T 21 S. , R 34 E	MD Reference:	KB=30 @ 3739.30usft (Nabors 894)
Well:	Lychee State Com #3H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

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	Sec. 22, T 21 S. , R 34 E		
Site Position:		Northing:	531,373.19 usft
From:	Map	Easting:	812,058.40 usft
Position Uncertainty:	5.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32.45679
		Longitude:	-103.32165
		Grid Convergence:	0.54 °

Well	Lychee State Com #3H		
Well Position	+N/-S	0.00 usft	Northing: 531,306.40 usft
	+E/-W	0.00 usft	Easting: 769,560.40 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32.45764
		Longitude:	-103.45942
		Ground Level:	3,709.30 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	10/10/2018	6.70
			Dip Angle (°)
			60.33
			Field Strength (nT)
			48,105

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			359.51

Survey Tool Program	Date 10/10/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
0.00	19,152.29	Plan #1 (Wellbore #1)	MWD
			Description
			MWD - Standard

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	
Lychee State Com #3H FTP										
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	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	

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Well:	Lychee State Com #3H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

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)
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
1,300.00	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
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	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
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00

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Well:	Lychee State Com #3H	North Reference:	Grid
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Design:	Plan #1	Database:	EDM 5000.1

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,581.55	0.00	0.00	8,581.55	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 12.00									
8,600.00	2.21	359.51	8,600.00	0.36	0.00	0.36	12.00	12.00	0.00
8,700.00	14.21	359.51	8,698.79	14.62	-0.13	14.62	12.00	12.00	0.00
8,800.00	26.21	359.51	8,792.46	49.11	-0.42	49.11	12.00	12.00	0.00
8,900.00	38.21	359.51	8,876.91	102.31	-0.88	102.32	12.00	12.00	0.00
9,000.00	50.21	359.51	8,948.45	171.92	-1.48	171.93	12.00	12.00	0.00
9,100.00	62.21	359.51	9,003.96	254.88	-2.19	254.89	12.00	12.00	0.00
9,200.00	74.21	359.51	9,041.01	347.56	-2.99	347.57	12.00	12.00	0.00
9,300.00	86.21	359.51	9,057.97	445.92	-3.83	445.94	12.00	12.00	0.00

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

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)
9,327.42	89.50	359.51	9,059.00	473.32	-4.07	473.33	12.00	12.00	0.00
Start 9824.91 hold at 9327.42 MD									
9,400.00	89.50	359.51	9,059.62	545.89	-4.69	545.91	0.00	0.00	0.00
9,500.00	89.50	359.51	9,060.49	645.89	-5.55	645.91	0.00	0.00	0.00
9,600.00	89.50	359.51	9,061.35	745.88	-6.41	745.91	0.00	0.00	0.00
9,700.00	89.50	359.51	9,062.22	845.87	-7.27	845.90	0.00	0.00	0.00
9,800.00	89.50	359.51	9,063.09	945.86	-8.13	945.90	0.00	0.00	0.00
9,900.00	89.50	359.51	9,063.95	1,045.86	-8.99	1,045.89	0.00	0.00	0.00
10,000.00	89.50	359.51	9,064.82	1,145.85	-9.85	1,145.89	0.00	0.00	0.00
10,100.00	89.50	359.51	9,065.68	1,245.84	-10.71	1,245.89	0.00	0.00	0.00
10,200.00	89.50	359.51	9,066.55	1,345.83	-11.57	1,345.88	0.00	0.00	0.00
10,300.00	89.50	359.51	9,067.41	1,445.83	-12.43	1,445.88	0.00	0.00	0.00
10,400.00	89.50	359.51	9,068.28	1,545.82	-13.29	1,545.88	0.00	0.00	0.00
10,500.00	89.50	359.51	9,069.14	1,645.81	-14.14	1,645.87	0.00	0.00	0.00
10,600.00	89.50	359.51	9,070.01	1,745.80	-15.00	1,745.87	0.00	0.00	0.00
10,700.00	89.50	359.51	9,070.87	1,845.80	-15.86	1,845.86	0.00	0.00	0.00
10,800.00	89.50	359.51	9,071.74	1,945.79	-16.72	1,945.86	0.00	0.00	0.00
10,900.00	89.50	359.51	9,072.60	2,045.78	-17.58	2,045.86	0.00	0.00	0.00
11,000.00	89.50	359.51	9,073.47	2,145.77	-18.44	2,145.85	0.00	0.00	0.00
11,100.00	89.50	359.51	9,074.33	2,245.77	-19.30	2,245.85	0.00	0.00	0.00
11,200.00	89.50	359.51	9,075.20	2,345.76	-20.16	2,345.85	0.00	0.00	0.00
11,300.00	89.50	359.51	9,076.06	2,445.75	-21.02	2,445.84	0.00	0.00	0.00
11,400.00	89.50	359.51	9,076.93	2,545.74	-21.88	2,545.84	0.00	0.00	0.00
11,500.00	89.50	359.51	9,077.79	2,645.74	-22.74	2,645.83	0.00	0.00	0.00
11,600.00	89.50	359.51	9,078.66	2,745.73	-23.60	2,745.83	0.00	0.00	0.00
11,700.00	89.50	359.51	9,079.52	2,845.72	-24.46	2,845.83	0.00	0.00	0.00
11,800.00	89.50	359.51	9,080.39	2,945.71	-25.32	2,945.82	0.00	0.00	0.00
11,900.00	89.50	359.51	9,081.25	3,045.71	-26.18	3,045.82	0.00	0.00	0.00
12,000.00	89.50	359.51	9,082.12	3,145.70	-27.04	3,145.82	0.00	0.00	0.00
12,100.00	89.50	359.51	9,082.98	3,245.69	-27.89	3,245.81	0.00	0.00	0.00
12,200.00	89.50	359.51	9,083.85	3,345.68	-28.75	3,345.81	0.00	0.00	0.00
12,300.00	89.50	359.51	9,084.71	3,445.68	-29.61	3,445.80	0.00	0.00	0.00
12,400.00	89.50	359.51	9,085.58	3,545.67	-30.47	3,545.80	0.00	0.00	0.00
12,500.00	89.50	359.51	9,086.45	3,645.66	-31.33	3,645.80	0.00	0.00	0.00
12,600.00	89.50	359.51	9,087.31	3,745.65	-32.19	3,745.79	0.00	0.00	0.00
12,700.00	89.50	359.51	9,088.18	3,845.65	-33.05	3,845.79	0.00	0.00	0.00
12,800.00	89.50	359.51	9,089.04	3,945.64	-33.91	3,945.79	0.00	0.00	0.00
12,900.00	89.50	359.51	9,089.91	4,045.63	-34.77	4,045.78	0.00	0.00	0.00
13,000.00	89.50	359.51	9,090.77	4,145.62	-35.63	4,145.78	0.00	0.00	0.00
13,100.00	89.50	359.51	9,091.64	4,245.62	-36.49	4,245.77	0.00	0.00	0.00
13,200.00	89.50	359.51	9,092.50	4,345.61	-37.35	4,345.77	0.00	0.00	0.00
13,300.00	89.50	359.51	9,093.37	4,445.60	-38.21	4,445.77	0.00	0.00	0.00
13,400.00	89.50	359.51	9,094.23	4,545.60	-39.07	4,545.76	0.00	0.00	0.00
13,500.00	89.50	359.51	9,095.10	4,645.59	-39.93	4,645.76	0.00	0.00	0.00

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Lychee State Com #3H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=30 @ 3739.30usft (Nabors 894)
Site:	Sec. 22, T 21 S. , R 34 E	MD Reference:	KB=30 @ 3739.30usft (Nabors 894)
Well:	Lychee State Com #3H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,600.00	89.50	359.51	9,095.96	4,745.58	-40.79	4,745.76	0.00	0.00	0.00
13,700.00	89.50	359.51	9,096.83	4,845.57	-41.64	4,845.75	0.00	0.00	0.00
13,800.00	89.50	359.51	9,097.69	4,945.57	-42.50	4,945.75	0.00	0.00	0.00
13,900.00	89.50	359.51	9,098.56	5,045.56	-43.36	5,045.74	0.00	0.00	0.00
14,000.00	89.50	359.51	9,099.42	5,145.55	-44.22	5,145.74	0.00	0.00	0.00
14,100.00	89.50	359.51	9,100.29	5,245.54	-45.08	5,245.74	0.00	0.00	0.00
14,200.00	89.50	359.51	9,101.15	5,345.54	-45.94	5,345.73	0.00	0.00	0.00
14,300.00	89.50	359.51	9,102.02	5,445.53	-46.80	5,445.73	0.00	0.00	0.00
14,400.00	89.50	359.51	9,102.88	5,545.52	-47.66	5,545.73	0.00	0.00	0.00
14,500.00	89.50	359.51	9,103.75	5,645.51	-48.52	5,645.72	0.00	0.00	0.00
14,600.00	89.50	359.51	9,104.61	5,745.51	-49.38	5,745.72	0.00	0.00	0.00
14,700.00	89.50	359.51	9,105.48	5,845.50	-50.24	5,845.71	0.00	0.00	0.00
14,800.00	89.50	359.51	9,106.34	5,945.49	-51.10	5,945.71	0.00	0.00	0.00
14,900.00	89.50	359.51	9,107.21	6,045.48	-51.96	6,045.71	0.00	0.00	0.00
15,000.00	89.50	359.51	9,108.07	6,145.48	-52.82	6,145.70	0.00	0.00	0.00
15,100.00	89.50	359.51	9,108.94	6,245.47	-53.68	6,245.70	0.00	0.00	0.00
15,200.00	89.50	359.51	9,109.81	6,345.46	-54.53	6,345.70	0.00	0.00	0.00
15,300.00	89.50	359.51	9,110.67	6,445.45	-55.39	6,445.69	0.00	0.00	0.00
15,400.00	89.50	359.51	9,111.54	6,545.45	-56.25	6,545.69	0.00	0.00	0.00
15,500.00	89.50	359.51	9,112.40	6,645.44	-57.11	6,645.68	0.00	0.00	0.00
15,600.00	89.50	359.51	9,113.27	6,745.43	-57.97	6,745.68	0.00	0.00	0.00
15,700.00	89.50	359.51	9,114.13	6,845.42	-58.83	6,845.68	0.00	0.00	0.00
15,800.00	89.50	359.51	9,115.00	6,945.42	-59.69	6,945.67	0.00	0.00	0.00
15,900.00	89.50	359.51	9,115.86	7,045.41	-60.55	7,045.67	0.00	0.00	0.00
16,000.00	89.50	359.51	9,116.73	7,145.40	-61.41	7,145.67	0.00	0.00	0.00
16,100.00	89.50	359.51	9,117.59	7,245.39	-62.27	7,245.66	0.00	0.00	0.00
16,200.00	89.50	359.51	9,118.46	7,345.39	-63.13	7,345.66	0.00	0.00	0.00
16,300.00	89.50	359.51	9,119.32	7,445.38	-63.99	7,445.65	0.00	0.00	0.00
16,400.00	89.50	359.51	9,120.19	7,545.37	-64.85	7,545.65	0.00	0.00	0.00
16,500.00	89.50	359.51	9,121.05	7,645.36	-65.71	7,645.65	0.00	0.00	0.00
16,600.00	89.50	359.51	9,121.92	7,745.36	-66.57	7,745.64	0.00	0.00	0.00
16,700.00	89.50	359.51	9,122.78	7,845.35	-67.43	7,845.64	0.00	0.00	0.00
16,800.00	89.50	359.51	9,123.65	7,945.34	-68.28	7,945.64	0.00	0.00	0.00
16,900.00	89.50	359.51	9,124.51	8,045.34	-69.14	8,045.63	0.00	0.00	0.00
17,000.00	89.50	359.51	9,125.38	8,145.33	-70.00	8,145.63	0.00	0.00	0.00
17,100.00	89.50	359.51	9,126.24	8,245.32	-70.86	8,245.62	0.00	0.00	0.00
17,200.00	89.50	359.51	9,127.11	8,345.31	-71.72	8,345.62	0.00	0.00	0.00
17,300.00	89.50	359.51	9,127.97	8,445.31	-72.58	8,445.62	0.00	0.00	0.00
17,400.00	89.50	359.51	9,128.84	8,545.30	-73.44	8,545.61	0.00	0.00	0.00
17,500.00	89.50	359.51	9,129.70	8,645.29	-74.30	8,645.61	0.00	0.00	0.00
17,600.00	89.50	359.51	9,130.57	8,745.28	-75.16	8,745.61	0.00	0.00	0.00
17,700.00	89.50	359.51	9,131.43	8,845.28	-76.02	8,845.60	0.00	0.00	0.00
17,800.00	89.50	359.51	9,132.30	8,945.27	-76.88	8,945.60	0.00	0.00	0.00

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Lychee State Com #3H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=30 @ 3739.30usft (Nabors 894)
Site:	Sec. 22, T 21 S , R 34 E	MD Reference:	KB=30 @ 3739.30usft (Nabors 894)
Well:	Lychee State Com #3H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

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)
17,900.00	89.50	359.51	9,133.17	9,045.26	-77.74	9,045.59	0.00	0.00	0.00
18,000.00	89.50	359.51	9,134.03	9,145.25	-78.60	9,145.59	0.00	0.00	0.00
18,100.00	89.50	359.51	9,134.90	9,245.25	-79.46	9,245.59	0.00	0.00	0.00
18,200.00	89.50	359.51	9,135.76	9,345.24	-80.32	9,345.58	0.00	0.00	0.00
18,300.00	89.50	359.51	9,136.63	9,445.23	-81.18	9,445.58	0.00	0.00	0.00
18,400.00	89.50	359.51	9,137.49	9,545.22	-82.03	9,545.58	0.00	0.00	0.00
18,500.00	89.50	359.51	9,138.36	9,645.22	-82.89	9,645.57	0.00	0.00	0.00
18,600.00	89.50	359.51	9,139.22	9,745.21	-83.75	9,745.57	0.00	0.00	0.00
18,700.00	89.50	359.51	9,140.09	9,845.20	-84.61	9,845.56	0.00	0.00	0.00
18,800.00	89.50	359.51	9,140.95	9,945.19	-85.47	9,945.56	0.00	0.00	0.00
18,900.00	89.50	359.51	9,141.82	10,045.19	-86.33	10,045.56	0.00	0.00	0.00
19,000.00	89.50	359.51	9,142.68	10,145.18	-87.19	10,145.55	0.00	0.00	0.00
19,100.00	89.50	359.51	9,143.55	10,245.17	-88.05	10,245.55	0.00	0.00	0.00
Lychee State Com #3H LTP									
19,152.33	89.50	359.51	9,144.00	10,297.50	-88.50	10,297.88	0.00	0.00	0.00
TD at 19152.33 - Lychee State Com #3H BHL									

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									
Lychee State Com #3	0.00	0.00	0.00	-109.90	1.00	531,196.50	769,561.40	32.45734	-103.45942
- plan misses target center by 109.90usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
Lychee State Com #3	0.00	0.00	9,143.57	10,247.50	-88.00	541,553.90	769,472.40	32.48581	-103.45943
- plan misses target center by 2.33usft at 19100.00usft MD (9143.55 TVD, 10245.17 N, -88.05 E)									
- Point									
Lychee State Com #3	0.00	0.00	9,144.00	10,297.50	-88.50	541,603.90	769,471.90	32.48595	-103.45943
- plan hits target center									
- Point									

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Lychee State Com #3H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=30 @ 3739.30usft (Nabors 894)
Site:	Sec. 22, T 21 S., R 34 E	MD Reference:	KB=30 @ 3739.30usft (Nabors 894)
Well:	Lychee State Com #3H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,769.30	1,769.30	Rustler		0.00	
2,209.30	2,209.30	TOS		0.00	
3,589.30	3,589.30	BOS / Tansill		0.00	
3,689.30	3,689.30	Yates		0.00	
3,939.30	3,939.30	Seven Rivers			
4,159.30	4,159.30	Capitan Reef			
5,519.30	5,519.30	Base of Reef (BLCN)			
5,784.30	5,784.30	CYCN			
6,859.30	6,859.30	BYCN			
8,319.30	8,319.30	Bone Spring (BSGL)			
8,890.39	8,869.30	U Avalon Sh			
9,017.33	8,959.30	L Avalon Sh			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
8582	8582	0	0	Start Build 12.00	
9327	9059	473	-4	Start 9824.91 hold at 9327.42 MD	
19,152	9144	10,297	-88	TD at 19152.33	

Checked By: _____	Approved By: _____	Date: _____
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COG Operating L L C
 Project: Lea County, NM (NAD27 NME)
 Site: Sec. 22, T 21 S., R 34 E
 Well: Lychee State Com #3H
 Wellbore: Wellbore #1
 Plan: Plan #1 (Lychee State Com #3H/Wellbore #1)
 Nabors 894



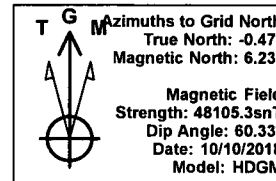
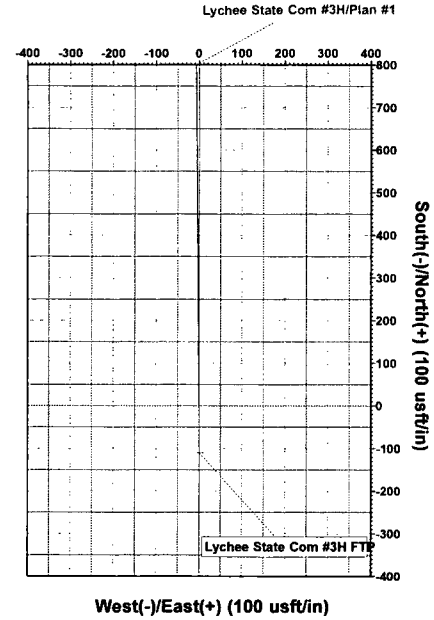
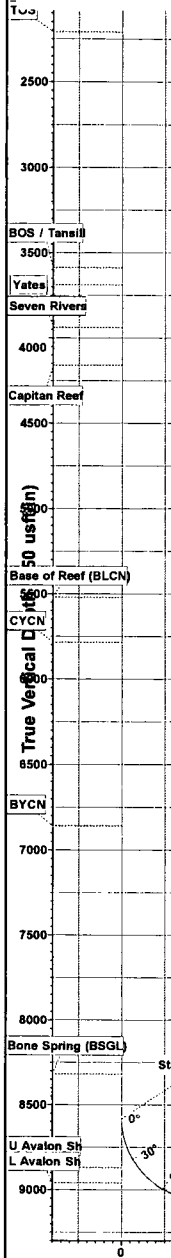
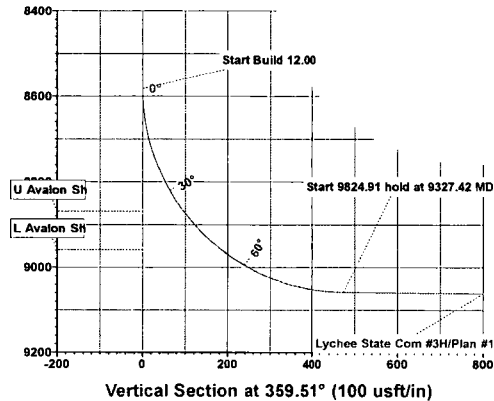
WELL DETAILS: Lychee State Com #3H

Ground Elevation:: 3709.30
 RKB Elevation: KB=30 @ 3739.30usft (Nabors 894)
 Rig Name: Nabors 894

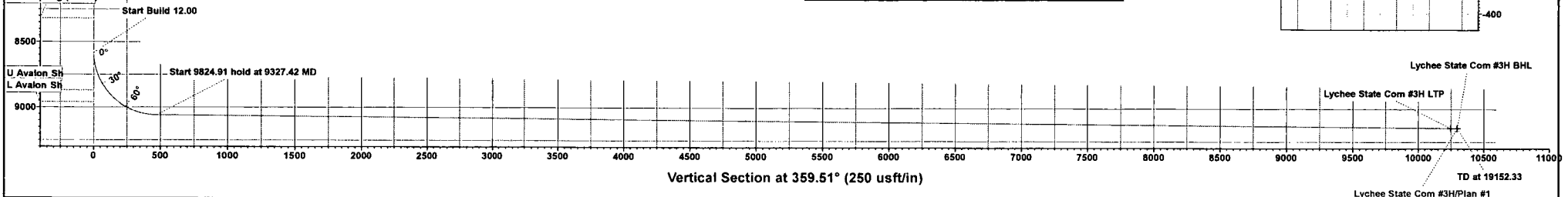
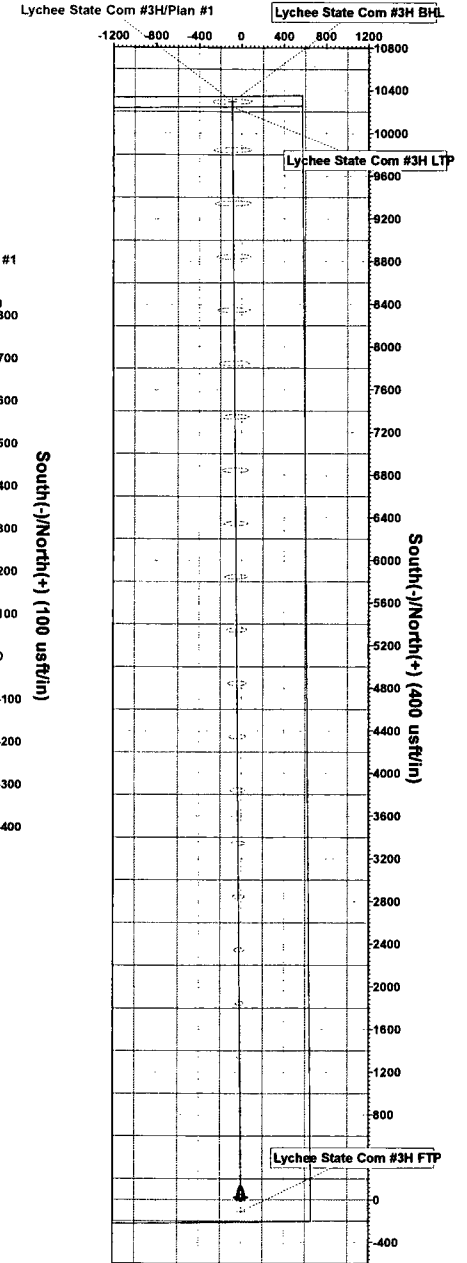
Northing	Easting	Latitude	Longitude
531306.40	769560.40	32.45764	-103.45941

Planned Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	8581.55	0.00	0.00	8581.55	0.00	0.00	0.00	0.00	0.00
3	9327.42	89.50	359.51	9059.00	473.32	-4.07	12.00	359.51	473.33
4	19152.33	89.50	359.51	9144.00	10297.50	-88.50	0.00	0.00	10297.88



PROJECT DETAILS: Lea County, NM (NAD27 NME)
 Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001
 System Datum: Mean Sea Level
 Local North: Grid



Lychee State Com #3H BHL

Lychee State Com #3H LTP

TD at 19152.33

Lychee State Com #3H/Plan #1