



NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 31 2019

RECEIVED

COG Operating, LLC

Eddy County, NM (NAD 27)

Sec 20, T19S, R28E

Bigfoot State COM #502H

Wellbore #1

30.015-45706

Plan: Design #2

QES Well Planning Report

23 January, 2019





Well Planning Report



Database: EDM 5000.1 Single User Db
Company: COG Operating, LLC
Project: Eddy County, NM (NAD 27)
Site: Sec 20, T19S, R28E
Well: Bigfoot State COM #502H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well Bigfoot State COM #502H
TVD Reference: KB=29' @ 3509.0usft (Noram #21)
MD Reference: KB=29' @ 3509.0usft (Noram #21)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy County, NM (NAD 27)		
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 20, T19S, R28E				
Site Position:		Northing:	597,367.00 usft	Latitude:	32° 38' 31.914 N
From:	Map	Easting:	539,602.30 usft	Longitude:	104° 12' 16.837 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.07 °

Well	Bigfoot State COM #502H				
Well Position	+N/-S 30.0 usft	Northing:	597,397.00 usft	Latitude:	32° 38' 32.211 N
	+E/-W 0.2 usft	Easting:	539,602.50 usft	Longitude:	104° 12' 16.835 W
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level:	3,480.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	2/10/2019	7.35	60.36	47,876.00000000

Design	Design #2				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	85.77	

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,100.0	1.00	0.00	2,100.0	0.9	0.0	1.00	1.00	0.00	0.00	
6,572.7	1.00	0.00	6,572.0	78.9	0.0	0.00	0.00	0.00	0.00	
7,450.0	88.00	74.50	7,141.9	235.6	530.4	10.00	9.92	8.49	74.54	
8,678.0	88.00	74.50	7,184.7	563.6	1,713.0	0.00	0.00	0.00	0.00	
9,426.1	88.00	89.47	7,211.0	667.5	2,451.2	2.00	0.00	2.00	90.26	
16,935.2	88.00	89.47	7,473.0	736.8	9,955.4	0.00	0.00	0.00	0.00	BSC #502 - PBHL - D



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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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
2.0	0.00	0.00	2.0	0.0	0.0	0.0	0.00	0.00	0.00
TOS									
96.0	0.00	0.00	96.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
BOS / Tansil									
146.0	0.00	0.00	146.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
Yates									
636.0	0.00	0.00	636.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
Seven Rivers									
987.0	0.00	0.00	987.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Queen									
1,526.0	0.00	0.00	1,526.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Grayburg									
1,865.0	0.00	0.00	1,865.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 1°/100'									
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
EOB @ 1.00° Inc / 0.00° Azm									
2,100.0	1.00	0.00	2,100.0	0.9	0.0	0.1	1.00	1.00	0.00
2,200.0	1.00	0.00	2,200.0	2.6	0.0	0.2	0.00	0.00	0.00
2,300.0	1.00	0.00	2,300.0	4.4	0.0	0.3	0.00	0.00	0.00
2,400.0	1.00	0.00	2,399.9	6.1	0.0	0.5	0.00	0.00	0.00
San Andres									
2,480.1	1.00	0.00	2,480.0	7.5	0.0	0.6	0.00	0.00	0.00
2,500.0	1.00	0.00	2,499.9	7.9	0.0	0.6	0.00	0.00	0.00
Lovington Sand									
2,548.1	1.00	0.00	2,548.0	8.7	0.0	0.6	0.00	0.00	0.00
2,600.0	1.00	0.00	2,599.9	9.6	0.0	0.7	0.00	0.00	0.00
2,700.0	1.00	0.00	2,699.9	11.3	0.0	0.8	0.00	0.00	0.00
2,800.0	1.00	0.00	2,799.9	13.1	0.0	1.0	0.00	0.00	0.00
2,900.0	1.00	0.00	2,899.9	14.8	0.0	1.1	0.00	0.00	0.00
3,000.0	1.00	0.00	2,999.9	16.6	0.0	1.2	0.00	0.00	0.00
3,100.0	1.00	0.00	3,099.8	18.3	0.0	1.4	0.00	0.00	0.00
3,200.0	1.00	0.00	3,199.8	20.1	0.0	1.5	0.00	0.00	0.00



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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)
Bone Sprg (BSGL)									
3,279.2	1.00	0.00	3,279.0	21.5	0.0	1.6	0.00	0.00	0.00
3,300.0	1.00	0.00	3,299.8	21.8	0.0	1.6	0.00	0.00	0.00
3,400.0	1.00	0.00	3,399.8	23.6	0.0	1.7	0.00	0.00	0.00
3,500.0	1.00	0.00	3,499.8	25.3	0.0	1.9	0.00	0.00	0.00
3,600.0	1.00	0.00	3,599.8	27.1	0.0	2.0	0.00	0.00	0.00
3,700.0	1.00	0.00	3,699.8	28.8	0.0	2.1	0.00	0.00	0.00
U Avalon Sh									
3,796.3	1.00	0.00	3,796.0	30.5	0.0	2.2	0.00	0.00	0.00
3,800.0	1.00	0.00	3,799.7	30.5	0.0	2.3	0.00	0.00	0.00
3,900.0	1.00	0.00	3,899.7	32.3	0.0	2.4	0.00	0.00	0.00
L Avalon Sh									
3,953.3	1.00	0.00	3,953.0	33.2	0.0	2.5	0.00	0.00	0.00
4,000.0	1.00	0.00	3,999.7	34.0	0.0	2.5	0.00	0.00	0.00
Basal Avalon									
4,059.3	1.00	0.00	4,059.0	35.1	0.0	2.6	0.00	0.00	0.00
4,100.0	1.00	0.00	4,099.7	35.8	0.0	2.6	0.00	0.00	0.00
4,200.0	1.00	0.00	4,199.7	37.5	0.0	2.8	0.00	0.00	0.00
4,300.0	1.00	0.00	4,299.7	39.3	0.0	2.9	0.00	0.00	0.00
4,400.0	1.00	0.00	4,399.6	41.0	0.0	3.0	0.00	0.00	0.00
4,500.0	1.00	0.00	4,499.6	42.8	0.0	3.2	0.00	0.00	0.00
4,600.0	1.00	0.00	4,599.6	44.5	0.0	3.3	0.00	0.00	0.00
4,700.0	1.00	0.00	4,699.6	46.2	0.0	3.4	0.00	0.00	0.00
4,800.0	1.00	0.00	4,799.6	48.0	0.0	3.5	0.00	0.00	0.00
4,900.0	1.00	0.00	4,899.6	49.7	0.0	3.7	0.00	0.00	0.00
5,000.0	1.00	0.00	4,999.6	51.5	0.0	3.8	0.00	0.00	0.00
5,100.0	1.00	0.00	5,099.5	53.2	0.0	3.9	0.00	0.00	0.00
5,200.0	1.00	0.00	5,199.5	55.0	0.0	4.1	0.00	0.00	0.00
FBSG_sand									
5,291.5	1.00	0.00	5,291.0	56.6	0.0	4.2	0.00	0.00	0.00
5,300.0	1.00	0.00	5,299.5	56.7	0.0	4.2	0.00	0.00	0.00
5,400.0	1.00	0.00	5,399.5	58.5	0.0	4.3	0.00	0.00	0.00
5,500.0	1.00	0.00	5,499.5	60.2	0.0	4.4	0.00	0.00	0.00
5,600.0	1.00	0.00	5,599.5	62.0	0.0	4.6	0.00	0.00	0.00
5,700.0	1.00	0.00	5,699.4	63.7	0.0	4.7	0.00	0.00	0.00
5,800.0	1.00	0.00	5,799.4	65.4	0.0	4.8	0.00	0.00	0.00
5,900.0	1.00	0.00	5,899.4	67.2	0.0	5.0	0.00	0.00	0.00
6,000.0	1.00	0.00	5,999.4	68.9	0.0	5.1	0.00	0.00	0.00
6,100.0	1.00	0.00	6,099.4	70.7	0.0	5.2	0.00	0.00	0.00
6,200.0	1.00	0.00	6,199.4	72.4	0.0	5.3	0.00	0.00	0.00
6,300.0	1.00	0.00	6,299.4	74.2	0.0	5.5	0.00	0.00	0.00
6,400.0	1.00	0.00	6,399.3	75.9	0.0	5.6	0.00	0.00	0.00
6,500.0	1.00	0.00	6,499.3	77.7	0.0	5.7	0.00	0.00	0.00
Build 10°/100'									
6,572.7	1.00	0.00	6,572.0	78.9	0.0	5.8	0.00	0.00	0.00
6,600.0	3.15	56.73	6,599.3	79.6	0.6	6.5	10.00	7.87	207.69
6,650.0	8.06	67.71	6,649.0	81.7	5.0	11.0	10.00	9.81	21.96
6,700.0	13.03	70.37	6,698.2	84.9	13.6	19.8	10.00	9.96	5.32
6,750.0	18.02	71.57	6,746.3	89.2	26.2	32.7	10.00	9.98	2.41
6,800.0	23.02	72.26	6,793.2	94.7	42.9	49.8	10.00	9.99	1.39
6,850.0	28.01	72.72	6,838.3	101.1	63.4	70.7	10.00	9.99	0.91
6,900.0	33.01	73.05	6,881.3	108.6	87.7	95.5	10.00	9.99	0.66
6,950.0	38.01	73.30	6,922.0	117.0	115.5	123.8	10.00	10.00	0.50



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7,000.0	43.01	73.50	6,960.0	126.3	146.6	155.5	10.00	10.00	0.40
SBSG_sand									
7,026.5	45.66	73.59	6,979.0	131.5	164.4	173.6	10.00	10.00	0.34
7,050.0	48.01	73.67	6,995.1	136.3	180.8	190.4	10.00	10.00	0.32
7,100.0	53.00	73.81	7,026.8	147.1	217.8	228.1	10.00	10.00	0.28
7,150.0	58.00	73.93	7,055.2	158.6	257.4	268.4	10.00	10.00	0.25
7,200.0	63.00	74.04	7,079.8	170.6	299.2	311.0	10.00	10.00	0.22
7,250.0	68.00	74.14	7,100.5	183.0	343.0	355.5	10.00	10.00	0.20
7,300.0	73.00	74.24	7,117.2	195.9	388.3	401.7	10.00	10.00	0.19
7,350.0	78.00	74.33	7,129.7	209.0	434.9	449.1	10.00	10.00	0.18
7,400.0	83.00	74.42	7,137.9	222.3	482.3	497.4	10.00	10.00	0.17
EOC @ 88.00° Inc / 74.50° Azm / 7141.9' TVD									
7,450.0	88.00	74.50	7,141.9	235.6	530.4	546.3	10.00	10.00	0.17
7,500.0	88.00	74.50	7,143.6	249.0	578.5	595.3	0.00	0.00	0.00
7,600.0	88.00	74.50	7,147.1	275.7	674.8	693.3	0.00	0.00	0.00
7,700.0	88.00	74.50	7,150.6	302.4	771.1	791.3	0.00	0.00	0.00
7,800.0	88.00	74.50	7,154.1	329.1	867.4	889.3	0.00	0.00	0.00
7,900.0	88.00	74.50	7,157.6	355.8	963.7	987.4	0.00	0.00	0.00
8,000.0	88.00	74.50	7,161.1	382.5	1,060.0	1,085.4	0.00	0.00	0.00
8,100.0	88.00	74.50	7,164.5	409.2	1,156.3	1,183.4	0.00	0.00	0.00
8,200.0	88.00	74.50	7,168.0	435.9	1,252.6	1,281.4	0.00	0.00	0.00
8,300.0	88.00	74.50	7,171.5	462.6	1,348.9	1,379.4	0.00	0.00	0.00
8,400.0	88.00	74.50	7,175.0	489.3	1,445.2	1,477.4	0.00	0.00	0.00
8,500.0	88.00	74.50	7,178.5	516.1	1,541.6	1,575.4	0.00	0.00	0.00
8,600.0	88.00	74.50	7,182.0	542.8	1,637.9	1,673.4	0.00	0.00	0.00
Turn 2°/100'									
8,678.0	88.00	74.50	7,184.7	563.6	1,713.0	1,749.9	0.00	0.00	0.00
8,700.0	88.00	74.94	7,185.5	569.4	1,734.2	1,771.5	2.00	-0.01	2.00
8,800.0	87.99	76.94	7,189.0	593.7	1,831.1	1,869.9	2.00	-0.01	2.00
8,900.0	87.99	78.94	7,192.5	614.5	1,928.9	1,968.9	2.00	0.00	2.00
9,000.0	87.98	80.94	7,196.0	632.0	2,027.2	2,068.4	2.00	0.00	2.00
9,100.0	87.98	82.94	7,199.5	646.0	2,126.2	2,168.1	2.00	0.00	2.00
9,200.0	87.99	84.95	7,203.1	656.5	2,225.6	2,268.0	2.00	0.00	2.00
9,300.0	87.99	86.95	7,206.6	663.6	2,325.3	2,367.9	2.00	0.00	2.00
9,400.0	88.00	88.95	7,210.1	667.2	2,425.1	2,467.8	2.00	0.01	2.00
EOT @ 89.47° Azm									
9,426.1	88.00	89.47	7,211.0	667.5	2,451.2	2,493.8	2.00	0.01	2.00
9,500.0	88.00	89.47	7,213.6	668.2	2,525.1	2,567.5	0.00	0.00	0.00
9,600.0	88.00	89.47	7,217.0	669.1	2,625.0	2,667.2	0.00	0.00	0.00
9,700.0	88.00	89.47	7,220.5	670.1	2,724.9	2,767.0	0.00	0.00	0.00
9,800.0	88.00	89.47	7,224.0	671.0	2,824.9	2,866.7	0.00	0.00	0.00
9,900.0	88.00	89.47	7,227.5	671.9	2,924.8	2,966.4	0.00	0.00	0.00
10,000.0	88.00	89.47	7,231.0	672.8	3,024.7	3,066.1	0.00	0.00	0.00
10,100.0	88.00	89.47	7,234.5	673.8	3,124.7	3,165.9	0.00	0.00	0.00
10,200.0	88.00	89.47	7,238.0	674.7	3,224.6	3,265.6	0.00	0.00	0.00
10,300.0	88.00	89.47	7,241.5	675.6	3,324.5	3,365.3	0.00	0.00	0.00
10,400.0	88.00	89.47	7,245.0	676.5	3,424.5	3,465.1	0.00	0.00	0.00
10,500.0	88.00	89.47	7,248.4	677.4	3,524.4	3,564.8	0.00	0.00	0.00
10,600.0	88.00	89.47	7,251.9	678.4	3,624.3	3,664.5	0.00	0.00	0.00
10,700.0	88.00	89.47	7,255.4	679.3	3,724.3	3,764.3	0.00	0.00	0.00
10,800.0	88.00	89.47	7,258.9	680.2	3,824.2	3,864.0	0.00	0.00	0.00
10,900.0	88.00	89.47	7,262.4	681.1	3,924.1	3,963.7	0.00	0.00	0.00
11,000.0	88.00	89.47	7,265.9	682.1	4,024.1	4,063.4	0.00	0.00	0.00



Well Planning Report



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Well: Bigfoot State COM #502H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well Bigfoot State COM #502H
KB=29' @ 3509.0usft (Noram #21)
KB=29' @ 3509.0usft (Noram #21)
Grid
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)
11,100.0	88.00	89.47	7,269.4	683.0	4,124.0	4,163.2	0.00	0.00	0.00
11,200.0	88.00	89.47	7,272.9	683.9	4,223.9	4,262.9	0.00	0.00	0.00
11,300.0	88.00	89.47	7,276.4	684.8	4,323.9	4,362.6	0.00	0.00	0.00
11,400.0	88.00	89.47	7,279.9	685.7	4,423.8	4,462.4	0.00	0.00	0.00
11,500.0	88.00	89.47	7,283.3	686.7	4,523.8	4,562.1	0.00	0.00	0.00
11,600.0	88.00	89.47	7,286.8	687.6	4,623.7	4,661.8	0.00	0.00	0.00
11,700.0	88.00	89.47	7,290.3	688.5	4,723.6	4,761.6	0.00	0.00	0.00
11,800.0	88.00	89.47	7,293.8	689.4	4,823.6	4,861.3	0.00	0.00	0.00
11,900.0	88.00	89.47	7,297.3	690.4	4,923.5	4,961.0	0.00	0.00	0.00
12,000.0	88.00	89.47	7,300.8	691.3	5,023.4	5,060.7	0.00	0.00	0.00
12,100.0	88.00	89.47	7,304.3	692.2	5,123.4	5,160.5	0.00	0.00	0.00
12,200.0	88.00	89.47	7,307.8	693.1	5,223.3	5,260.2	0.00	0.00	0.00
12,300.0	88.00	89.47	7,311.3	694.0	5,323.2	5,359.9	0.00	0.00	0.00
12,400.0	88.00	89.47	7,314.7	695.0	5,423.2	5,459.7	0.00	0.00	0.00
12,500.0	88.00	89.47	7,318.2	695.9	5,523.1	5,559.4	0.00	0.00	0.00
12,600.0	88.00	89.47	7,321.7	696.8	5,623.0	5,659.1	0.00	0.00	0.00
SBSG_sand base									
12,665.2	88.00	89.47	7,324.0	697.4	5,688.2	5,724.1	0.00	0.00	0.00
12,700.0	88.00	89.47	7,325.2	697.7	5,723.0	5,758.9	0.00	0.00	0.00
12,800.0	88.00	89.47	7,328.7	698.7	5,822.9	5,858.6	0.00	0.00	0.00
12,900.0	88.00	89.47	7,332.2	699.6	5,922.8	5,958.3	0.00	0.00	0.00
13,000.0	88.00	89.47	7,335.7	700.5	6,022.8	6,058.1	0.00	0.00	0.00
13,100.0	88.00	89.47	7,339.2	701.4	6,122.7	6,157.8	0.00	0.00	0.00
13,200.0	88.00	89.47	7,342.7	702.3	6,222.6	6,257.5	0.00	0.00	0.00
13,300.0	88.00	89.47	7,346.2	703.3	6,322.6	6,357.2	0.00	0.00	0.00
13,400.0	88.00	89.47	7,349.6	704.2	6,422.5	6,457.0	0.00	0.00	0.00
13,500.0	88.00	89.47	7,353.1	705.1	6,522.5	6,556.7	0.00	0.00	0.00
13,600.0	88.00	89.47	7,356.6	706.0	6,622.4	6,656.4	0.00	0.00	0.00
13,700.0	88.00	89.47	7,360.1	707.0	6,722.3	6,756.2	0.00	0.00	0.00
13,800.0	88.00	89.47	7,363.6	707.9	6,822.3	6,855.9	0.00	0.00	0.00
13,900.0	88.00	89.47	7,367.1	708.8	6,922.2	6,955.6	0.00	0.00	0.00
14,000.0	88.00	89.47	7,370.6	709.7	7,022.1	7,055.4	0.00	0.00	0.00
14,100.0	88.00	89.47	7,374.1	710.6	7,122.1	7,155.1	0.00	0.00	0.00
14,200.0	88.00	89.47	7,377.6	711.6	7,222.0	7,254.8	0.00	0.00	0.00
14,300.0	88.00	89.47	7,381.0	712.5	7,321.9	7,354.5	0.00	0.00	0.00
14,400.0	88.00	89.47	7,384.5	713.4	7,421.9	7,454.3	0.00	0.00	0.00
14,500.0	88.00	89.47	7,388.0	714.3	7,521.8	7,554.0	0.00	0.00	0.00
14,600.0	88.00	89.47	7,391.5	715.3	7,621.7	7,653.7	0.00	0.00	0.00
14,700.0	88.00	89.47	7,395.0	716.2	7,721.7	7,753.5	0.00	0.00	0.00
14,800.0	88.00	89.47	7,398.5	717.1	7,821.6	7,853.2	0.00	0.00	0.00
14,900.0	88.00	89.47	7,402.0	718.0	7,921.5	7,952.9	0.00	0.00	0.00
15,000.0	88.00	89.47	7,405.5	719.0	8,021.5	8,052.7	0.00	0.00	0.00
15,100.0	88.00	89.47	7,409.0	719.9	8,121.4	8,152.4	0.00	0.00	0.00
15,200.0	88.00	89.47	7,412.5	720.8	8,221.3	8,252.1	0.00	0.00	0.00
15,300.0	88.00	89.47	7,415.9	721.7	8,321.3	8,351.9	0.00	0.00	0.00
15,400.0	88.00	89.47	7,419.4	722.6	8,421.2	8,451.6	0.00	0.00	0.00
15,500.0	88.00	89.47	7,422.9	723.6	8,521.1	8,551.3	0.00	0.00	0.00
15,600.0	88.00	89.47	7,426.4	724.5	8,621.1	8,651.0	0.00	0.00	0.00
15,700.0	88.00	89.47	7,429.9	725.4	8,721.0	8,750.8	0.00	0.00	0.00
15,800.0	88.00	89.47	7,433.4	726.3	8,821.0	8,850.5	0.00	0.00	0.00
15,900.0	88.00	89.47	7,436.9	727.3	8,920.9	8,950.2	0.00	0.00	0.00
16,000.0	88.00	89.47	7,440.4	728.2	9,020.8	9,050.0	0.00	0.00	0.00
16,100.0	88.00	89.47	7,443.9	729.1	9,120.8	9,149.7	0.00	0.00	0.00



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Wellbore: Wellbore #1
Design: Design #2

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North Reference:
Survey Calculation Method:

Well Bigfoot State COM #502H
KB=29' @ 3509.0usft (Noram #21)
KB=29' @ 3509.0usft (Noram #21)
Grid
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)
16,200.0	88.00	89.47	7,447.3	730.0	9,220.7	9,249.4	0.00	0.00	0.00
16,300.0	88.00	89.47	7,450.8	730.9	9,320.6	9,349.2	0.00	0.00	0.00
16,400.0	88.00	89.47	7,454.3	731.9	9,420.6	9,448.9	0.00	0.00	0.00
16,500.0	88.00	89.47	7,457.8	732.8	9,520.5	9,548.6	0.00	0.00	0.00
16,600.0	88.00	89.47	7,461.3	733.7	9,620.4	9,648.3	0.00	0.00	0.00
16,700.0	88.00	89.47	7,464.8	734.6	9,720.4	9,748.1	0.00	0.00	0.00
16,800.0	88.00	89.47	7,468.3	735.6	9,820.3	9,847.8	0.00	0.00	0.00
16,900.0	88.00	89.47	7,471.8	736.5	9,920.2	9,947.5	0.00	0.00	0.00
TD @ 16935.2' MD / 7473.0' TVD									
16,935.2	88.00	89.47	7,473.0	736.8	9,955.4	9,982.6	0.00	0.00	0.00

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
BSC #502 - FTP - plan misses target center by 712.4usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E) - Point	0.00	0.00	0.0	642.2	-308.4	598,039.20	539,294.10	32° 38' 38.569 N	104° 12' 20.432 W
BSC #502 - LTP - plan misses target center by 7466.7usft at 16624.4usft MD (7462.2 TVD, 733.9 N, 9644.9 E) - Point	0.00	0.00	0.0	736.4	9,905.4	598,133.40	549,507.90	32° 38' 39.364 N	104° 10' 20.975 W
BSC #502 - PBHL - D#2 - plan hits target center - Point	0.00	0.00	7,473.0	736.8	9,955.4	598,133.80	549,557.90	32° 38' 39.368 N	104° 10' 20.390 W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2.0	2.0	Rustler			
96.0	96.0	TOS			
146.0	146.0	BOS / Tansil			
636.0	636.0	Yates			
987.0	987.0	Seven Rivers			
1,526.0	1,526.0	Queen			
1,865.0	1,865.0	Grayburg			
2,480.1	2,480.0	San Andres			
2,548.1	2,548.0	Lovington Sand			
3,279.2	3,279.0	Bone Sprg (BSGL)			
3,796.3	3,796.0	U Avalon Sh			
3,953.3	3,953.0	L Avalon Sh			
4,059.3	4,059.0	Basal Avalon			
5,291.5	5,291.0	FBSG_sand			
7,026.5	6,979.0	SBSG_sand			
12,665.2	7,324.0	SBSG_sand base			



Well Planning Report



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Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well Bigfoot State COM #502H
TVD Reference: KB=29' @ 3509.0usft (Noram #21)
MD Reference: KB=29' @ 3509.0usft (Noram #21)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.0	2,000.0	0.0	0.0	Build 1"/100'
2,100.0	2,100.0	0.9	0.0	EOB @ 1.00° Inc / 0.00° Azm
6,572.7	6,572.0	78.9	0.0	Build 10"/100'
7,450.0	7,141.9	235.6	530.4	EOC @ 88.00° Inc / 74.50° Azm / 7141.9' TVD
8,678.0	7,184.7	563.6	1,713.0	Turn 2"/100'
9,426.1	7,211.0	667.5	2,451.2	EOT @ 89.47° Azm
16,935.2	7,473.0	736.8	9,955.4	TD @ 16935.2' MD / 7473.0' TVD

Sec 20, T19S, R23E
Bigfoot State CO# 4502H
Q181¹⁰⁰⁰ & WT-181¹⁰⁰⁰
Design #2

DEPOSIT TARGET DETAILS									
Name	TYD	AMT	DATE	STATUS	AMOUNT	DATE	STATUS	AMOUNT	DATE
BSC 0001 - PYP	0.0	642.2	11/01/99	100%	100%	11/01/99	100%	100%	11/01/99
BSC 0002 - LTP	0.0	788.8	08/01/99	100%	100%	08/01/99	100%	100%	08/01/99
BSC 0003 - PBM	0.0	717.0	08/01/99	100%	100%	08/01/99	100%	100%	08/01/99

