



Company: Concho
Lease/Well: Sneed 9 Federal Com No /023H

Rig Name: Patriot 6
State/County: New Mexico/Lea
VS-Azi: 0.00 Degrees
Latitude: 32.85176, Longitude: -103.77947
Grid North = True North -0.30 degs (NAD 27)
Grid Correction Applied = -0.30 degs



HOBBS OCD

JUL 11 2016

RECEIVED

Depth Reference : RKB = 16 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 7/6/2016 / 13:23

VES Survey International

Midland, TX

432-563-5444

Surveyor: Andrew Askew

Sneed 9 Federal Com No 023H / API 30-025-41410

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.68	120.07	100.00	-0.30	0.51	-0.30	0.59	120.07	0.68
200.00	0.49	78.30	199.99	-0.51	1.45	-0.51	1.53	109.31	0.45
300.00	0.49	127.87	299.99	-0.68	2.21	-0.68	2.31	107.22	0.41
400.00	0.58	121.92	399.99	-1.22	2.98	-1.22	3.22	112.22	0.10
500.00	0.27	136.63	499.98	-1.66	3.57	-1.66	3.94	114.88	0.33
600.00	0.10	85.35	599.98	-1.82	3.82	-1.82	4.23	115.49	0.22
700.00	0.14	14.53	699.98	-1.70	3.93	-1.70	4.28	113.35	0.14
800.00	0.12	8.96	799.98	-1.47	3.98	-1.47	4.24	110.32	0.02
900.00	0.31	336.03	899.98	-1.11	3.88	-1.11	4.04	106.02	0.22
1000.00	0.34	324.34	999.98	-0.62	3.60	-0.62	3.65	99.84	0.07
1100.00	0.47	10.61	1099.98	0.02	3.50	0.02	3.50	89.74	0.34
1200.00	0.48	29.35	1199.97	0.78	3.78	0.78	3.86	78.31	0.16
1300.00	0.61	42.53	1299.97	1.54	4.35	1.54	4.61	70.47	0.18
1400.00	0.60	48.23	1399.96	2.29	5.10	2.29	5.59	65.85	0.06
1500.00	0.63	39.32	1499.96	3.07	5.85	3.07	6.60	62.32	0.10
1600.00	0.36	39.57	1599.95	3.73	6.40	3.73	7.41	59.72	0.28
1700.00	0.41	54.40	1699.95	4.18	6.89	4.18	8.06	58.72	0.11
1800.00	0.67	64.14	1799.95	4.65	7.70	4.65	9.00	58.90	0.28

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	1.09	62.10	1899.93	5.35	9.08	5.35	10.54	59.49	0.42
2000.00	1.29	62.96	1999.91	6.31	10.92	6.31	12.61	59.99	0.20
2120.00	1.81	71.10	2119.87	7.54	13.92	7.54	15.83	61.57	0.47



HOBBS OCD

JUL 11 2016

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COG Operating LLC

Lea County, NM (NAD-27 2015)

Sneed 9 Federal Com #23H

API #: 30-025-41410

SHL: 1650' FNL, 330' FWL, Sec 9, T17S, R32E, Unit E

PP: 1673' FNL, 330' FWL, Sec 9, T17S, R32E, Unit E

BHL: 1672' FNL, 969' FWL, Sec 10, T17S, R32E, Unit E

Design: BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E

Standard Survey Report

21 April, 2016



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Sneed 9 Federal Com #23H
Project:	Lea County, NM (NAD-27 2015)	TVD Reference:	KB @ 4098.00usft (Patriot 6)
Site:	Sneed 9 Federal Com #23H	MD Reference:	KB @ 4098.00usft (Patriot 6)
Well:	SHL: 1650' FNL, 330' FWL, Sec 9, T17S, R32E, Unit E	North Reference:	Grid
Wellbore:	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E	Database:	EDM 5000.1 Single User Db

Project	Lea County, NM (NAD-27 2015)		
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	Sneed 9 Federal Com #23H				
Site Position:		Northing:	674,029.10 usft	Latitude:	32° 51' 6.336 N
From:	Map	Easting:	670,397.30 usft	Longitude:	103° 46' 42.486 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.30 °

Well	SHL: 1650' FNL, 330' FWL, Sec 9, T17S, R32E, Unit E					
Well Position	+N/-S	0.00 usft	Northing:	674,029.10 usft	Latitude:	32° 51' 6.336 N
	+E/-W	0.00 usft	Easting:	670,397.30 usft	Longitude:	103° 46' 42.486 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,080.00 usft

Wellbore	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	3/22/2016	7.23	60.62	48,412

Design	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	90.02	

Survey Program	Date	4/21/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	2,120.00	VES Gyro #1 (BHL: 1670' FNL, 970' FWL,	VES-ISCWSA-GYRO-3	Biaxial Semi-Cont. Gyro	
2,311.00	12,351.00	TDS MWD #2 (BHL: 1670' FNL, 970' FWL	MWD	MWD - Standard	

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	
100.00	0.68	120.07	100.00	-0.30	0.51	0.51	0.68	0.68	0.00	
200.00	0.49	78.30	199.99	-0.51	1.45	1.45	0.45	-0.19	-41.77	
300.00	0.49	127.87	299.99	-0.68	2.20	2.20	0.41	0.00	49.57	
400.00	0.58	121.92	399.99	-1.21	2.97	2.97	0.11	0.09	-5.95	
500.00	0.27	136.63	499.98	-1.65	3.56	3.56	0.33	-0.31	14.71	
600.00	0.10	85.35	599.98	-1.82	3.81	3.81	0.22	-0.17	-51.28	

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Wellbore:	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E	Database:	EDM 5000.1 Single User Db

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)
700.00	0.14	14.53	699.98	-1.69	3.93	3.93	0.14	0.04	-70.82
800.00	0.12	8.96	799.98	-1.47	3.97	3.97	0.02	-0.02	-5.57
900.00	0.31	336.03	899.98	-1.12	3.88	3.88	0.22	0.19	-32.93
1,000.00	0.34	324.34	999.98	-0.63	3.60	3.60	0.07	0.03	-11.69
1,100.00	0.47	10.61	1,099.98	0.01	3.50	3.50	0.34	0.13	46.27
1,200.00	0.48	29.35	1,199.97	0.78	3.78	3.78	0.15	0.01	18.74
1,300.00	0.61	42.53	1,299.97	1.54	4.35	4.35	0.18	0.13	13.18
1,400.00	0.60	48.23	1,399.96	2.28	5.10	5.10	0.06	-0.01	5.70
1,500.00	0.63	39.32	1,499.96	3.05	5.84	5.83	0.10	0.03	-8.91
1,600.00	0.36	39.57	1,599.95	3.72	6.38	6.38	0.27	-0.27	0.25
1,700.00	0.41	54.40	1,699.95	4.17	6.87	6.87	0.11	0.05	14.83
1,800.00	0.67	64.14	1,799.95	4.64	7.69	7.69	0.27	0.26	9.74
1,900.00	1.09	62.10	1,899.94	5.34	9.06	9.06	0.42	0.42	-2.04
2,000.00	1.29	62.96	1,999.91	6.29	10.90	10.90	0.20	0.20	0.86
2,120.00	1.81	71.10	2,119.87	7.52	13.90	13.90	0.47	0.43	6.78
Tie-In to VES Gyro									
2,311.00	1.80	90.40	2,310.78	8.48	19.75	19.75	0.32	-0.01	10.10
First TDS MWD Survey									
2,343.00	1.90	91.10	2,342.76	8.46	20.78	20.78	0.32	0.31	2.19
2,438.00	2.20	275.30	2,437.74	8.60	20.54	20.54	4.31	0.32	-185.05
2,533.00	3.40	263.00	2,532.62	8.43	15.93	15.93	1.41	1.26	-12.95
2,628.00	3.10	267.00	2,627.47	7.95	10.57	10.57	0.40	-0.32	4.21
2,723.00	4.00	268.30	2,722.29	7.72	4.69	4.69	0.95	0.95	1.37
2,818.00	4.70	274.60	2,817.01	7.93	-2.50	-2.50	0.89	0.74	6.63
2,914.00	4.90	273.30	2,912.68	8.48	-10.51	-10.52	0.24	0.21	-1.35
3,009.00	6.00	269.50	3,007.25	8.67	-19.53	-19.53	1.22	1.16	-4.00
3,104.00	5.80	266.10	3,101.74	8.30	-29.28	-29.29	0.42	-0.21	-3.58
3,199.00	5.50	261.80	3,196.28	7.33	-38.58	-38.58	0.55	-0.32	-4.53
3,295.00	5.70	259.10	3,291.83	5.77	-47.81	-47.81	0.34	0.21	-2.81
3,390.00	6.10	256.10	3,386.32	3.66	-57.35	-57.35	0.53	0.42	-3.16
3,485.00	7.30	262.10	3,480.67	1.62	-68.22	-68.22	1.46	1.26	6.32
3,574.00	6.60	261.60	3,569.02	0.10	-78.88	-78.88	0.79	-0.79	-0.56
3,669.00	6.20	261.50	3,663.43	-1.46	-89.36	-89.36	0.42	-0.42	-0.11
3,764.00	6.20	260.40	3,757.87	-3.07	-99.49	-99.49	0.13	0.00	-1.16
3,859.00	6.20	260.30	3,852.31	-4.79	-109.61	-109.60	0.01	0.00	-0.11
3,954.00	6.20	259.30	3,946.76	-6.61	-119.70	-119.70	0.11	0.00	-1.05
4,049.00	6.00	259.40	4,041.22	-8.48	-129.62	-129.62	0.21	-0.21	0.11
4,144.00	6.30	259.00	4,135.67	-10.38	-139.62	-139.62	0.32	0.32	-0.42
4,239.00	7.20	263.10	4,230.02	-12.09	-150.65	-150.64	1.07	0.95	4.32
4,334.00	7.50	267.00	4,324.24	-13.13	-162.75	-162.75	0.61	0.32	4.11
4,429.00	7.50	273.00	4,418.42	-13.13	-175.13	-175.13	0.82	0.00	6.32
4,525.00	7.30	274.70	4,513.62	-12.31	-187.47	-187.46	0.31	-0.21	1.77

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Wellbore:	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E	Database:	EDM 5000.1 Single User Db

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)
4,620.00	7.30	275.40	4,607.85	-11.24	-199.49	-199.49	0.09	0.00	0.74
4,715.00	7.60	265.80	4,702.06	-11.14	-211.77	-211.76	1.35	0.32	-10.11
4,811.00	6.50	260.30	4,797.33	-12.52	-223.45	-223.45	1.34	-1.15	-5.73
4,906.00	6.40	259.40	4,891.73	-14.40	-233.96	-233.95	0.15	-0.11	-0.95
5,002.00	6.70	258.60	4,987.10	-16.49	-244.71	-244.70	0.33	0.31	-0.83
5,097.00	5.20	262.00	5,081.59	-18.18	-254.40	-254.40	1.62	-1.58	3.58
5,192.00	5.20	264.30	5,176.20	-19.21	-262.95	-262.94	0.22	0.00	2.42
5,287.00	5.10	259.70	5,270.81	-20.39	-271.39	-271.38	0.45	-0.11	-4.84
5,383.00	5.30	258.60	5,366.42	-22.03	-279.93	-279.93	0.23	0.21	-1.15
5,478.00	5.00	258.10	5,461.04	-23.75	-288.29	-288.28	0.32	-0.32	-0.53
5,573.00	5.30	255.50	5,555.65	-25.70	-296.59	-296.58	0.40	0.32	-2.74
5,668.00	3.40	261.60	5,650.37	-27.21	-303.62	-303.61	2.06	-2.00	6.42
5,763.00	1.80	286.60	5,745.28	-27.20	-307.84	-307.83	2.03	-1.68	26.32
5,795.00	1.00	335.60	5,777.27	-26.80	-308.43	-308.43	4.28	-2.50	153.13
5,827.00	3.30	65.00	5,809.25	-26.16	-307.72	-307.71	10.74	7.19	279.38
5,859.00	7.60	82.60	5,841.10	-25.49	-304.78	-304.77	14.26	13.44	55.00
5,890.00	12.00	86.60	5,871.64	-25.04	-299.53	-299.52	14.35	14.19	12.90
5,922.00	16.20	86.20	5,902.67	-24.55	-291.75	-291.74	13.13	13.13	-1.25
5,954.00	19.90	83.60	5,933.09	-23.64	-281.88	-281.87	11.83	11.56	-8.13
5,985.00	23.10	84.10	5,961.93	-22.43	-270.58	-270.58	10.34	10.32	1.61
6,017.00	26.30	85.20	5,991.00	-21.19	-257.27	-257.27	10.10	10.00	3.44
6,049.00	28.90	87.40	6,019.35	-20.25	-242.48	-242.47	8.73	8.13	6.88
6,081.00	31.40	88.60	6,047.02	-19.69	-226.42	-226.41	8.04	7.81	3.75
6,112.00	34.20	89.40	6,073.08	-19.40	-209.63	-209.62	9.14	9.03	2.58
6,144.00	36.60	89.80	6,099.16	-19.28	-191.10	-191.09	7.53	7.50	1.25
6,176.00	38.90	90.50	6,124.46	-19.33	-171.51	-171.50	7.31	7.19	2.19
6,208.00	41.10	91.00	6,148.97	-19.60	-150.94	-150.93	6.95	6.88	1.56
6,239.00	43.30	91.10	6,171.93	-19.98	-130.12	-130.12	7.10	7.10	0.32
6,271.00	45.70	91.20	6,194.76	-20.43	-107.70	-107.69	7.50	7.50	0.31
6,303.00	48.10	91.00	6,216.62	-20.88	-84.34	-84.33	7.51	7.50	-0.63
6,334.00	50.60	91.00	6,236.81	-21.29	-60.83	-60.82	8.06	8.06	0.00
6,366.00	53.20	91.40	6,256.56	-21.82	-35.65	-35.64	8.18	8.13	1.25
6,398.00	55.50	91.40	6,275.21	-22.46	-9.66	-9.65	7.19	7.19	0.00
6,409.70	56.30	91.25	6,281.76	-22.68	0.03	0.04	6.95	6.87	-1.27
As-Drilled PP									
6,430.00	57.70	91.00	6,292.82	-23.01	17.05	17.06	6.95	6.88	-1.24
6,461.00	60.20	90.70	6,308.81	-23.41	43.60	43.61	8.11	8.06	-0.97
6,493.00	62.70	90.70	6,324.10	-23.75	71.71	71.71	7.81	7.81	0.00
6,525.00	65.10	90.90	6,338.18	-24.15	100.44	100.45	7.52	7.50	0.63
6,556.00	68.00	91.00	6,350.51	-24.62	128.87	128.88	9.36	9.35	0.32
6,588.00	70.70	90.80	6,361.80	-25.09	158.81	158.82	8.46	8.44	-0.63
6,620.00	73.80	90.40	6,371.55	-25.41	189.28	189.29	9.76	9.69	-1.25

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6,652.00	77.00	89.70	6,379.62	-25.44	220.24	220.25	10.22	10.00	-2.19
6,683.00	80.00	89.50	6,385.80	-25.23	250.62	250.62	9.70	9.68	-0.65
6,715.00	83.20	89.20	6,390.47	-24.87	282.27	282.28	10.04	10.00	-0.94
6,747.00	86.70	89.00	6,393.29	-24.37	314.13	314.14	10.96	10.94	-0.63
6,779.00	88.30	88.30	6,394.68	-23.61	346.09	346.10	5.46	5.00	-2.19
6,810.00	88.70	88.10	6,395.49	-22.64	377.07	377.07	1.44	1.29	-0.65
6,905.00	89.30	88.80	6,397.15	-20.07	472.02	472.02	0.97	0.63	0.74
7,000.00	90.20	89.10	6,397.57	-18.33	567.00	567.00	1.00	0.95	0.32
7,095.00	88.80	88.70	6,398.40	-16.51	661.97	661.98	1.53	-1.47	-0.42
7,191.00	89.50	88.70	6,399.82	-14.33	757.94	757.94	0.73	0.73	0.00
7,286.00	90.90	88.50	6,399.49	-12.01	852.91	852.91	1.49	1.47	-0.21
7,381.00	90.10	89.70	6,398.66	-10.51	947.89	947.89	1.52	-0.84	1.26
7,476.00	88.70	90.40	6,399.65	-10.60	1,042.88	1,042.89	1.65	-1.47	0.74
7,571.00	89.70	90.30	6,400.98	-11.18	1,137.87	1,137.87	1.06	1.05	-0.11
7,667.00	90.50	90.00	6,400.81	-11.43	1,233.87	1,233.87	0.89	0.83	-0.31
7,703.00	91.10	89.50	6,400.31	-11.27	1,269.86	1,269.87	2.17	1.67	-1.39
7,798.00	90.20	90.60	6,399.23	-11.35	1,364.86	1,364.86	1.50	-0.95	1.16
7,894.00	90.40	90.90	6,398.73	-12.61	1,460.85	1,460.85	0.38	0.21	0.31
7,989.00	90.50	90.50	6,397.98	-13.77	1,555.84	1,555.84	0.43	0.11	-0.42
8,084.00	89.50	90.30	6,397.98	-14.44	1,650.83	1,650.84	1.07	-1.05	-0.21
8,179.00	89.60	90.00	6,398.73	-14.68	1,745.83	1,745.83	0.33	0.11	-0.32
8,274.00	89.60	90.40	6,399.39	-15.02	1,840.83	1,840.83	0.42	0.00	0.42
8,369.00	88.70	90.20	6,400.80	-15.51	1,935.81	1,935.82	0.97	-0.95	-0.21
8,464.00	90.90	90.50	6,401.13	-16.09	2,030.80	2,030.81	2.34	2.32	0.32
8,560.00	90.50	90.60	6,399.96	-17.01	2,126.79	2,126.80	0.43	-0.42	0.10
8,655.00	89.70	90.10	6,399.80	-17.59	2,221.79	2,221.80	0.99	-0.84	-0.53
8,750.00	89.20	89.40	6,400.71	-17.18	2,316.78	2,316.79	0.91	-0.53	-0.74
8,845.00	91.30	89.70	6,400.29	-16.43	2,411.77	2,411.78	2.23	2.21	0.32
8,941.00	90.90	89.40	6,398.45	-15.68	2,507.75	2,507.76	0.52	-0.42	-0.31
9,036.00	89.90	89.30	6,397.79	-14.60	2,602.74	2,602.75	1.06	-1.05	-0.11
9,131.00	88.70	89.00	6,398.95	-13.19	2,697.72	2,697.73	1.30	-1.26	-0.32
9,226.00	90.60	89.50	6,399.53	-11.95	2,792.71	2,792.71	2.07	2.00	0.53
9,321.00	89.60	90.20	6,399.36	-11.70	2,887.71	2,887.71	1.28	-1.05	0.74
9,416.00	88.40	90.20	6,401.02	-12.03	2,982.69	2,982.69	1.26	-1.26	0.00
9,511.00	90.30	90.40	6,402.10	-12.53	3,077.68	3,077.68	2.01	2.00	0.21
9,606.00	90.50	89.70	6,401.43	-12.61	3,172.68	3,172.68	0.77	0.21	-0.74
9,702.00	90.00	89.40	6,401.01	-11.86	3,268.67	3,268.68	0.61	-0.52	-0.31
9,797.00	89.20	88.90	6,401.68	-10.45	3,363.66	3,363.66	0.99	-0.84	-0.53
9,892.00	91.70	89.50	6,400.93	-9.12	3,458.64	3,458.64	2.71	2.63	0.63
9,987.00	91.30	89.60	6,398.45	-8.38	3,553.60	3,553.60	0.43	-0.42	0.11
10,082.00	90.90	89.90	6,396.62	-7.96	3,648.58	3,648.59	0.53	-0.42	0.32
10,177.00	89.80	89.50	6,396.04	-7.47	3,743.58	3,743.58	1.23	-1.16	-0.42

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Sneed 9 Federal Com #23H
Project:	Lea County, NM (NAD-27 2015)	TVD Reference:	KB @ 4098.00usft (Patriot 6)
Site:	Sneed 9 Federal Com #23H	MD Reference:	KB @ 4098.00usft (Patriot 6)
Well:	SHL: 1650' FNL, 330' FWL, Sec 9, T17S, R32E, Unit E	North Reference:	Grid
Wellbore:	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 1670' FNL, 970' FWL, Sec 10, T17S, R32E, Unit E	Database:	EDM 5000.1 Single User Db

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)
10,272.00	88.80	89.40	6,397.20	-6.55	3,838.57	3,838.57	1.06	-1.05	-0.11
10,367.00	88.30	89.50	6,399.61	-5.64	3,933.53	3,933.53	0.54	-0.53	0.11
10,463.00	90.40	90.00	6,400.69	-5.22	4,029.52	4,029.52	2.25	2.19	0.52
10,558.00	89.70	90.40	6,400.61	-5.56	4,124.52	4,124.52	0.85	-0.74	0.42
10,653.00	88.40	90.30	6,402.19	-6.14	4,219.50	4,219.50	1.37	-1.37	-0.11
10,749.00	90.30	90.80	6,403.28	-7.06	4,315.48	4,315.49	2.05	1.98	0.52
10,844.00	90.70	90.00	6,402.45	-7.72	4,410.48	4,410.48	0.94	0.42	-0.84
10,939.00	90.50	90.30	6,401.45	-7.97	4,505.47	4,505.47	0.38	-0.21	0.32
11,034.00	90.00	90.30	6,401.04	-8.47	4,600.47	4,600.47	0.53	-0.53	0.00
11,129.00	89.30	89.60	6,401.62	-8.38	4,695.47	4,695.47	1.04	-0.74	-0.74
11,224.00	88.80	89.10	6,403.19	-7.31	4,790.45	4,790.45	0.74	-0.53	-0.53
11,319.00	90.80	89.50	6,403.52	-6.15	4,885.43	4,885.44	2.15	2.11	0.42
11,415.00	90.20	89.80	6,402.69	-5.56	4,981.43	4,981.43	0.70	-0.63	0.31
11,509.00	89.40	89.90	6,403.01	-5.31	5,075.43	5,075.43	0.86	-0.85	0.11
11,605.00	88.70	89.50	6,404.61	-4.81	5,171.41	5,171.41	0.84	-0.73	-0.42
11,700.00	90.80	89.80	6,405.02	-4.23	5,266.40	5,266.40	2.23	2.21	0.32
11,795.00	91.20	89.90	6,403.36	-3.98	5,361.39	5,361.39	0.43	0.42	0.11
11,890.00	90.90	89.40	6,401.62	-3.40	5,456.37	5,456.37	0.61	-0.32	-0.53
11,985.00	90.40	89.30	6,400.54	-2.32	5,551.36	5,551.36	0.54	-0.53	-0.11
12,080.00	89.30	90.10	6,400.79	-1.83	5,646.35	5,646.35	1.43	-1.16	0.84
12,175.00	89.50	89.90	6,401.79	-1.83	5,741.35	5,741.35	0.30	0.21	-0.21
12,271.00	91.60	90.30	6,400.87	-1.99	5,837.34	5,837.34	2.23	2.19	0.42
Final MWD Survey									
12,351.00	91.60	90.30	6,398.63	-2.41	5,917.31	5,917.31	0.00	0.00	0.00
Projection to Bit/TD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,120.00	2,119.87	7.52	13.90	Tie-In to VES Gyro
2,311.00	2,310.78	8.48	19.75	First TDS MWD Survey
6,409.70	6,281.76	-22.68	0.03	As-Drilled PP
12,271.00	6,400.87	-1.99	5,837.34	Final MWD Survey
12,351.00	6,398.63	-2.41	5,917.31	Projection to Bit/TD

Checked By: _____ Approved By: _____ Date: _____

Submit within 45 days of well completion	State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division 1220 S. St Francis Dr. Santa Fe, NM 87505	Revised November 6, 2013 1. WELL API NO. 30-025-41410 2. Well Name: SNEED 9 FEDERAL COM #023H 3. Well Number: 023H				
HYDRAULIC FRACTURING FLUID DISCLOSURE ☒ Original ☐ Amendment		4. Surface Hole Location: Unit:E Lot:E Section:9 Township:17S Range:32E Feet from:1650 N/S Line:N Feet from:330 E/W Line:W 5. Bottom Hole Location: Unit:E Lot:E Section:9 Township:17S Range:32E Feet from:1650 N/S Line:N Feet from:330 E/W Line:W 6. latitude: 32.851841 longitude: -103.7790375 7. County: Lea				
8. Operator Name and Address: COG OPERATING LLC One Concho Center 600 W. Illinois Ave Midland 79701		9. OGRID: 229137 10. Phone Number: 432-685-4332				
11. Last Fracture Date: 5/20/2016 Frac Performed by: Pro Petro Services		12. Production Type: O				
13. Pool Code(s): 44500		14. Gross Fractured Interval: 6,630 ft to 12,254 ft				
15. True Vertical Depth (TVD): 6,400 ft		16. Total Volume of Fluid Pumped: 5,090,232 gals				
17. Total Volume of Re-Use Water Pumped: 0 gals		18. Percent of Re-Use Water in Fluid Pumped: %				
19. HYDRAULIC FLUID COMPOSITION AND CONCENTRATION:						
Trade Name	Supplier	Purpose	Ingredients	(CAS #) Chemical Abstract Service #	Maximum Ingredient Concentration in Additive (% by mass)	Maximum Ingredient Concentration in HF Fluid (% by mass)
Water	Operator	Carrier/Base Fluid	Water	7732-18-5	100%	89.0489%
HA04-10-15% HCL	Reagent Chemical	Acidizing	Hydrogen Chloride	7647-01-0	15%	0.30965%
			Water	7732-18-5	85%	1.75466%
IC5-Iron Control	Economy Polymers	Iron Control	Acetic Acid	64-19-7	60%	0.00593%
			Citric Acid	77-92-6	60%	0.00297%
			Water	7732-18-5	60%	0.00593%
CI200-Corrosion Inhibitor	Economy Polymers	Corrosion Inhibitor	Methanol	67-56-1	60%	0.00176%
NE601-N/E Surfactant	EES	Surfactant	Methanol	67-56-1	70%	0.06778%
			Ethylene Glycol Monobutyl Ether	111-76-2	50%	0.04842%
			Diethanolamide	Proprietary	70%	0.06778%
BRXPA-Plexgel Breaker	Chemplex	Breaker	Hydrogen Peroxide	7722-84-1	100%	0.08418%
FR300-Anionic Friction Reducer	Economy Polymers	Friction Reducer	Trade Secret	Proprietary	100%	0.08306%
SI300-Scale Inhibitor	Colossal Chemical	Scale Inhibitor	Sodium Chloride	7647-14-5	7%	0.00291%
			Methanol	67-56-1	30%	0.01248%
SPD400-Solid Scale Inh.	Economy Polymers	Scale Inhibitor (Solid)	Bis(hexamethylenetriamine) penta methylene phosphonic acid salt	33657-77-3	60%	0.00943%
RAW-White/Brown Sand	Santrol	Proppant	Silica	14808-60-7	100%	7.50321%
CRS-Garnett	Preferred Sands	Proppant	Silica	14808-60-7	100%	1.04935%
20. I, as Operator, hereby certify that the information shown on this disclosure form is true and complete to the best of my knowledge and belief.						
Signature: <u>Signed Electronically</u>		Printed Name: <u>Kanicia Carrillo</u>		Title: <u>Regulatory Analyst</u>		
Date: <u>7/8/2016</u>						

E-mail Address: kcarrillo@conchoresources.com

NMOCD does not require the reporting of information beyond MSDS data as described in 29 CFR 1910.1200. NMOCD does not require the reporting or disclosure of proprietary, trade secret or confidential business information.