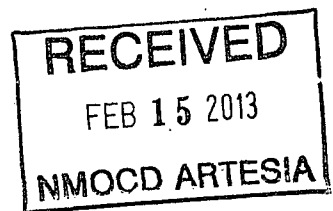
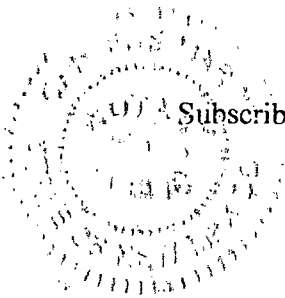


15- 40637

WELL NAME AND NUMBER Burch Keely Unit No. 947HLOCATION Section 23, T17S, R29E, Unit A, 990 FNL, 330 FEL, Eddy CountyOPERATOR COG Operating LLCDRILLING CONTRACTOR United Drilling, Inc.

The undersigned hereby certifies that he is an authorized representative of the drilling contractor who drilled the above described well and had conducted deviation test and obtained the following results:

Degrees @ Depth	Degrees @ Depth	Degrees @ Depth
.4° @ 143'		
.2° @ 305'		
2.1° @ 421'		
2.2° @ 575'		
2.2° @ 914'		
1.1° @ 1292'		
1.1° @ 1527'		
1.8° @ 1993'		
1.6° @ 2404'		
1.8° @ 2848'		
1.1° @ 3293'		
1.2° @ 3737'		
.3° @ 4181'		

Drilling Contractor- UNITED DRILLING, INC.By: *Luisa Noriega*
(Luisa Noriega)Title: Asst. Office ManagerSubscribed and sworn to before me this 28th day of September 2012.

Carlos Martinez
Notary Public
Chaves New Mexico
County State

My Commission Expires: 10/8/12

CRESCENT

DIRECTIONAL DRILLING

Minimum Curvature Calculation

Client: Concho Oil & Gas
Well: Burch Keely Unit #947H
County: Eddy
Rig: UDI 40

M.W.D. OPERATORS: Stephen de Anda/ Adrian Castro
DIRECTIONAL DRILLERS: Donnie Hale/ LeRoy Saiz
Tool Azimuth to Grid North: 7.75
Job #: PB-12612

Vertical Section Angle: 270.07

Sur #	Meas. Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N/-S	+E/-W	DLS
47	6541.00	91.20	268.90	4825.17	1887.42	36.11	-1887.38	0.74
48	6636.00	90.70	268.20	4823.60	1982.37	33.70	-1982.33	0.91
49	6731.00	91.60	267.70	4821.69	2077.29	30.31	-2077.25	1.08
50	6826.00	90.70	269.60	4819.79	2172.23	28.07	-2172.20	2.21
51	6921.00	91.40	270.40	4818.05	2267.22	28.07	-2267.18	1.12
52	7016.00	90.50	269.90	4816.47	2362.20	28.32	-2362.17	1.08
53	7111.00	91.30	270.10	4814.98	2457.19	28.32	-2457.16	0.87
54	7207.00	90.00	269.30	4813.89	2553.18	27.81	-2553.15	1.59
55	7302.00	90.70	269.40	4813.31	2648.17	26.74	-2648.14	0.74
56	7397.00	90.50	270.70	4812.31	2743.16	26.82	-2743.13	1.38
57	7492.00	90.90	271.40	4811.15	2838.14	28.56	-2838.11	0.85
58	7587.00	91.40	272.20	4809.25	2933.08	31.54	-2933.04	0.99
59	7682.00	92.40	271.90	4806.10	3027.97	34.94	-3027.93	1.10
60	7777.00	93.70	272.40	4801.04	3122.77	38.50	-3122.72	1.47
61	7873.00	91.30	272.60	4796.86	3218.58	42.68	-3218.53	2.51
62	7968.00	91.10	272.60	4794.87	3313.47	46.99	-3313.41	0.21
63	8063.00	90.50	272.30	4793.54	3408.38	51.05	-3408.32	0.71
64	8158.00	91.10	271.10	4792.21	3503.33	53.87	-3503.26	1.41
65	8253.00	90.20	270.00	4791.13	3598.31	54.78	-3598.25	1.50
66	8348.00	90.30	270.30	4790.72	3693.31	55.03	-3693.25	0.33
67	8444.00	90.80	270.10	4789.80	3789.31	55.36	-3789.24	0.56
68	8539.00	90.50	270.00	4788.72	3884.30	55.45	-3884.24	0.33
69	8634.00	90.70	269.90	4787.73	3979.30	55.36	-3979.23	0.24
70	8729.00	91.00	270.30	4786.32	4074.29	55.53	-4074.22	0.53
71	8824.00	90.10	269.40	4785.41	4169.28	55.28	-4169.21	1.34
72	8920.00	90.70	269.90	4784.73	4265.27	54.69	-4265.21	0.81
73	9015.00	90.80	268.70	4783.49	4360.26	53.53	-4360.19	1.27
74	9110.00	91.50	268.50	4781.58	4455.20	51.21	-4455.14	0.77
75	9205.00	91.90	268.00	4778.77	4550.11	48.31	-4550.06	0.67
PTD	9261.00	91.90	268.00	4776.91	4606.05	46.36	-4605.99	0.00

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CRESCENT

DIRECTIONAL DRILLING

Minimum Curvature Calculation

Client: Concho Oil & Gas
Well: Burch Keely Unit #947H
County: Eddy
Rig: UDI 40

M.W.D. OPERATORS: Stephen de Anda/ Adrian Castro
DIRECTIONAL DRILLERS: Donnie Hale/ LeRoy Salz
Tool Azimuth to Grid North: 7.75
Job #: PB-12612

Vertical Section Angle: 270.07

Sur #	Meas. Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N/-S	+E/-W	DLS
Tie In	4242.00	0.61	143.19	4241.00	-42.20	-63.00	42.20	0.00
1	4320.00	0.20	102.80	4319.00	-42.66	-63.36	42.58	0.61
2	4352.00	2.90	283.60	4350.99	-41.93	-63.18	41.85	9.69
3	4384.00	7.00	283.90	4382.86	-39.24	-62.53	39.17	12.81
4	4415.00	11.20	284.10	4413.46	-34.49	-61.34	34.41	13.55
5	4447.00	15.20	286.00	4444.61	-27.44	-59.42	27.36	12.57
6	4479.00	19.20	286.80	4475.17	-18.36	-56.75	18.29	12.52
7	4511.00	23.20	286.50	4505.00	-7.27	-53.43	7.20	12.50
8	4542.00	26.90	284.80	4533.08	5.37	-49.91	-5.44	12.16
9	4574.00	30.40	283.30	4561.16	20.26	-46.19	-20.32	11.17
10	4606.00	34.00	282.10	4588.23	36.90	-42.45	-36.95	11.43
11	4638.00	37.70	281.10	4614.17	55.26	-38.69	-55.31	11.71
12	4669.00	41.30	280.10	4638.08	74.64	-35.07	-74.69	11.79
13	4701.00	44.80	278.20	4661.46	96.21	-31.61	-96.25	11.66
14	4733.00	48.00	276.70	4683.53	119.19	-28.62	-119.22	10.56
15	4764.00	51.80	276.30	4703.49	142.75	-25.93	-142.78	12.30
16	4796.00	55.40	276.30	4722.48	168.35	-23.11	-168.38	11.25
17	4828.00	58.50	276.70	4739.93	195.00	-20.07	-195.02	9.74
18	4859.00	62.00	277.10	4755.31	221.72	-16.84	-221.74	11.35
19	4891.00	65.10	277.90	4769.56	250.12	-13.09	-250.14	9.94
20	4923.00	68.20	278.30	4782.24	279.21	-8.95	-279.22	9.76
21	4955.00	71.60	278.90	4793.24	308.92	-4.46	-308.93	10.77
22	4986.00	74.60	279.20	4802.25	338.22	0.21	-338.22	9.72
23	5018.00	76.40	278.00	4810.26	368.86	4.84	-368.85	6.69
24	5050.00	77.30	278.20	4817.54	399.71	9.23	-399.70	2.88
25	5081.00	79.60	278.60	4823.75	429.76	13.66	-429.74	7.53
26	5113.00	81.70	278.00	4828.95	461.01	18.22	-460.99	6.82
27	5145.00	83.50	277.00	4833.07	492.47	22.36	-492.45	6.42
28	5177.00	85.80	275.90	4836.05	524.13	25.94	-524.10	7.96
29	5208.00	87.40	274.60	4837.89	554.95	28.77	-554.92	6.65
30	5240.00	88.20	273.40	4839.12	586.85	31.00	-586.81	4.50
31	5272.00	88.40	273.10	4840.07	618.79	32.82	-618.75	1.13
32	5303.00	88.90	272.40	4840.80	649.75	34.30	-649.70	2.77
33	5335.00	89.00	271.90	4841.39	681.72	35.50	-681.68	1.59
34	5367.00	88.90	270.90	4841.97	713.70	36.29	-713.66	3.14
35	5399.00	89.10	270.90	4842.53	745.70	36.79	-745.65	0.63
36	5494.00	90.40	271.00	4842.95	840.68	38.36	-840.64	1.37
37	5589.00	91.10	271.10	4841.70	935.66	40.10	-935.61	0.74
38	5684.00	91.70	270.60	4839.38	1030.62	41.51	-1030.57	0.82
39	5779.00	90.20	270.20	4837.81	1125.60	42.18	-1125.55	1.63
40	5874.00	90.60	270.20	4837.14	1220.60	42.51	-1220.55	0.42
41	5970.00	91.20	269.80	4835.63	1316.59	42.51	-1316.54	0.75
42	6065.00	91.60	270.10	4833.31	1411.56	42.42	-1411.51	0.53
43	6160.00	91.30	269.80	4830.91	1506.53	42.34	-1506.48	0.45
44	6255.00	90.40	269.00	4829.50	1601.51	41.35	-1601.46	1.27
45	6351.00	91.30	268.90	4828.08	1697.48	39.59	-1697.43	0.94
46	6446.00	90.50	269.00	4826.58	1792.45	37.85	-1792.40	0.85



COG Operating LLC

Eddy County, NM

Burch Keely Unit 947H

#947H

OH

Design: OH

Standard Survey Report

25 September, 2012





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #947H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3617.0usft (UDI #40)
Site:	Burch Keely Unit 947H	MD Reference:	WELL @ 3617.0usft (UDI #40)
Well:	#947H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Project	Eddy 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	Burch Keely Unit 947H		
Site Position:		Northing:	663,773.68 usft
From:	Map	Easting:	590,899.82 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 28.024 N
		Longitude:	104° 2' 14.731 W
		Grid Convergence:	0.16 °

Well	#947H		
Well Position	+N/-S	0.0 usft	Northing: 663,773.68 usft
	+E/-W	0.0 usft	Easting: 590,899.82 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 49' 28.024 N
		Longitude:	104° 2' 14.731 W
		Ground Level:	3,603.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	3/28/2012	7.75
			Dip Angle (°)
			60.64
			Field Strength (nT)
			48,846

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			270.07

Survey Program	Date 9/25/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100.0	4,242.0	VES Gyro (OH)	CB-GYRO-MS
4,320.0	9,205.0	MWD1 (OH)	MWD
9,261.0	9,261.0	PTB (OH)	MWD
			Description
			Camera based gyro multishot
			MWD - Standard
			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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.38	154.15	100.0	-0.3	0.1	-0.1	0.38	0.38	0.00
200.0	0.63	141.27	200.0	-1.0	0.6	-0.6	0.27	0.25	-12.88
300.0	1.25	139.68	300.0	-2.3	1.7	-1.7	0.62	0.62	-1.59
400.0	2.06	145.05	399.9	-4.6	3.4	-3.4	0.82	0.81	5.37
500.0	1.01	139.05	499.9	-6.7	5.0	-5.0	1.06	-1.05	-6.00
600.0	1.75	123.18	599.9	-8.2	6.9	-6.9	0.83	0.74	-15.87
700.0	1.12	137.07	699.8	-9.8	8.8	-8.8	0.72	-0.63	13.89
800.0	1.77	109.59	799.8	-11.0	10.9	-11.0	0.93	0.65	-27.48

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #947H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3617'0usft (UDI #40)
Site:	Burch/Keely Unit 947H	MD Reference:	WELL @ 3617'0usft (UDI #40)
Well:	#947H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

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)
900.0	1.53	112.36	899.8	-12.0	13.6	-13.6	0.25	-0.24	2.77
1,000.0	1.94	114.23	999.7	-13.2	16.4	-16.4	0.41	-0.41	1.87
1,100.0	1.87	135.33	1,099.7	-15.1	19.1	-19.1	0.70	-0.07	21.10
1,200.0	1.06	127.12	1,199.6	-16.8	21.0	-21.0	0.83	-0.81	-8.21
1,300.0	0.70	120.09	1,299.6	-17.7	22.3	-22.3	0.38	-0.36	-7.03
1,400.0	1.45	133.11	1,399.6	-18.9	23.7	-23.7	0.78	0.75	13.02
1,500.0	0.68	133.86	1,499.6	-20.1	25.1	-25.1	0.77	-0.77	0.75
1,600.0	0.73	140.20	1,599.6	-21.0	25.9	-25.9	0.09	0.05	6.34
1,700.0	1.07	125.44	1,699.6	-22.1	27.1	-27.1	0.41	0.34	-14.76
1,800.0	1.27	127.81	1,799.5	-23.3	28.7	-28.7	0.21	0.20	2.37
1,900.0	1.29	131.24	1,899.5	-24.7	30.4	-30.5	0.08	0.02	3.43
2,000.0	2.01	139.32	1,999.5	-26.8	32.4	-32.4	0.75	0.72	8.08
2,100.0	1.45	135.40	2,099.4	-29.0	34.4	-34.5	0.57	-0.56	-3.92
2,200.0	1.08	164.30	2,199.4	-30.8	35.6	-35.6	0.73	-0.37	28.90
2,300.0	2.04	154.53	2,299.4	-33.3	36.6	-36.6	0.99	0.96	-9.77
2,400.0	1.16	165.04	2,399.3	-35.9	37.6	-37.7	0.92	-0.88	10.51
2,500.0	1.78	176.85	2,499.3	-38.4	38.0	-38.0	0.69	0.62	11.81
2,600.0	1.61	179.51	2,599.3	-41.4	38.1	-38.1	0.19	-0.17	2.66
2,700.0	0.88	175.82	2,699.2	-43.6	38.1	-38.2	0.73	-0.73	-3.69
2,800.0	1.89	168.72	2,799.2	-46.0	38.5	-38.6	1.02	1.01	-7.10
2,900.0	0.70	166.74	2,899.2	-48.2	39.0	-39.0	1.19	-1.19	-1.98
3,000.0	1.52	157.15	2,999.2	-50.0	39.6	-39.7	0.84	0.82	-9.59
3,100.0	1.31	197.37	3,099.1	-52.3	39.8	-39.9	0.99	-0.21	40.22
3,200.0	0.52	168.55	3,199.1	-53.8	39.6	-39.6	0.89	-0.79	-28.82
3,300.0	1.07	148.92	3,299.1	-55.1	40.1	-40.2	0.61	0.55	-19.63
3,400.0	0.78	137.07	3,399.1	-56.4	41.1	-41.1	0.35	-0.29	-11.85
3,500.0	0.70	139.15	3,499.1	-57.3	41.9	-42.0	0.08	-0.08	2.08
3,600.0	0.76	147.74	3,599.1	-58.4	42.7	-42.8	0.12	0.06	8.59
3,700.0	0.57	140.17	3,699.1	-59.3	43.4	-43.4	0.21	-0.19	-7.57
3,800.0	0.14	149.95	3,799.1	-59.8	43.8	-43.8	0.43	-0.43	9.78
3,900.0	0.46	248.17	3,899.1	-60.0	43.4	-43.5	0.50	0.32	98.22
4,000.0	0.67	222.48	3,999.1	-60.6	42.7	-42.7	0.32	0.21	-25.69
4,100.0	0.75	193.88	4,099.0	-61.7	42.1	-42.2	0.36	0.08	-28.60
4,200.0	0.44	173.28	4,199.0	-62.7	42.0	-42.1	0.37	-0.31	-20.60
4,242.0	0.61	143.19	4,241.0	-63.0	42.2	-42.2	0.76	0.40	-71.64
Gyro Tie in @ 4242' MD									
4,320.0	0.20	102.80	4,319.0	-63.4	42.5	-42.6	0.61	-0.53	-51.78
KOP: 4320.0' MD, 4319.0' TVD, 0.20° INC, 102.80° AZI, -42.6° VS									
4,352.0	2.90	283.60	4,351.0	-63.2	41.8	-41.9	9.69	8.44	-560.00
4,384.0	7.00	283.90	4,382.9	-62.6	39.1	-39.2	12.81	12.81	0.94
4,415.0	11.20	284.10	4,413.5	-61.4	34.4	-34.4	13.55	13.55	0.65
4,447.0	15.20	286.00	4,444.7	-59.5	27.3	-27.4	12.57	12.50	5.94
4,479.0	19.20	286.80	4,475.2	-56.8	18.2	-18.3	12.52	12.50	2.50



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #947H
Project:	Eddy County NM	TVD Reference:	WELL @ 3617.0usft (UDI #40)
Site:	Burch-Keely Unit 947H	MD Reference:	WELL @ 3617.0usft (UDI #40)
Well:	#947H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

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)	
4,511.0	23.20	286.50	4,505.0	-53.5	7.2	-7.2	12.50	12.50	-0.94	
4,542.0	26.90	284.80	4,533.1	-49.9	-5.5	5.4	12.16	11.94	-5.48	
4,574.0	30.40	283.30	4,561.2	-46.2	-20.4	20.3	11.17	10.94	-4.69	
4,606.0	34.00	282.10	4,588.3	-42.5	-37.0	36.9	11.43	11.25	-3.75	
4,638.0	37.70	281.10	4,614.2	-38.7	-55.3	55.3	11.71	11.56	-3.13	
4,669.0	41.30	280.10	4,638.1	-35.1	-74.7	74.7	11.79	11.61	-3.23	
4,701.0	44.80	278.20	4,661.5	-31.7	-96.3	96.3	11.66	10.94	-5.94	
4,733.0	48.00	276.70	4,683.6	-28.7	-119.3	119.2	10.56	10.00	-4.69	
4,764.0	51.80	276.30	4,703.5	-26.0	-142.8	142.8	12.30	12.26	-1.29	
4,796.0	55.40	276.30	4,722.5	-23.2	-168.4	168.4	11.25	11.25	0.00	
4,828.0	58.50	276.70	4,740.0	-20.1	-195.1	195.0	9.74	9.69	1.25	
4,859.0	62.00	277.10	4,755.4	-16.9	-221.8	221.8	11.35	11.29	1.29	
4,891.0	65.10	277.90	4,769.6	-13.1	-250.2	250.2	9.94	9.69	2.50	
4,923.0	68.20	278.30	4,782.3	-9.0	-279.3	279.3	9.76	9.69	1.25	
4,955.0	71.60	278.90	4,793.3	-4.5	-309.0	309.0	10.77	10.63	1.88	
4,984.9	74.49	279.19	4,802.0	0.0	-337.2	337.2	9.72	9.68	0.97	
Cross into 330 Lease - 4984.9' MD - 4802.0' TVD - 74.49° INC - 279.19° AZI - 337.2° VS										
4,986.0	74.60	279.20	4,802.3	0.2	-338.3	338.3	9.72	9.68	0.95	
5,018.0	76.40	278.00	4,810.3	4.8	-368.9	368.9	6.69	5.63	-3.75	
5,050.0	77.30	278.20	4,817.6	9.2	-399.7	399.7	2.88	2.81	0.63	
5,081.0	79.60	278.60	4,823.8	13.6	-429.8	429.8	7.53	7.42	1.29	
5,113.0	81.70	278.00	4,829.0	18.2	-461.0	461.0	6.82	6.56	-1.88	
5,145.0	83.50	277.00	4,833.1	22.3	-492.5	492.5	6.42	5.63	-3.13	
5,177.0	85.80	275.90	4,836.1	25.9	-524.1	524.2	7.96	7.19	-3.44	
5,208.0	87.40	274.60	4,837.9	28.7	-555.0	555.0	6.65	5.16	-4.19	
5,240.0	88.20	273.40	4,839.2	31.0	-586.9	586.9	4.50	2.50	-3.75	
5,272.0	88.40	273.10	4,840.1	32.8	-618.8	618.8	1.13	0.63	-0.94	
5,303.0	88.90	272.40	4,840.8	34.3	-649.7	649.8	2.77	1.61	-2.26	
5,335.0	89.00	271.90	4,841.4	35.5	-681.7	681.8	1.59	0.31	-1.56	
5,367.0	88.90	270.90	4,842.0	36.2	-713.7	713.7	3.14	-0.31	-3.13	
5,399.0	89.10	270.90	4,842.6	36.7	-745.7	745.7	0.63	0.63	0.00	
5,494.0	90.40	271.00	4,843.0	38.3	-840.7	840.7	1.37	1.37	0.11	
5,575.0	91.00	271.09	4,842.0	39.8	-921.7	921.7	0.74	0.74	0.11	
EOC - 5575.0' MD - 4842.0' TVD - 91.00° INC - 271.09° AZI - 921.7° VS										
5,589.0	91.10	271.10	4,841.7	40.1	-935.7	935.7	0.74	0.74	0.11	
5,684.0	91.70	270.60	4,839.4	41.5	-1,030.6	1,030.7	0.82	0.63	-0.53	
5,779.0	90.20	270.20	4,837.8	42.1	-1,125.6	1,125.6	1.63	-1.58	-0.42	
5,874.0	90.60	270.20	4,837.2	42.5	-1,220.6	1,220.6	0.42	0.42	0.00	
5,970.0	91.20	269.80	4,835.7	42.5	-1,316.6	1,316.6	0.75	0.63	-0.42	
6,065.0	91.60	270.10	4,833.4	42.4	-1,411.5	1,411.6	0.53	0.42	0.32	
6,160.0	91.30	269.80	4,831.0	42.3	-1,506.5	1,506.6	0.45	-0.32	-0.32	
6,255.0	90.40	269.00	4,829.5	41.3	-1,601.5	1,601.6	1.27	-0.95	-0.84	
6,351.0	91.30	268.90	4,828.1	39.5	-1,697.5	1,697.5	0.94	0.94	-0.10	
6,446.0	90.50	269.00	4,826.6	37.8	-1,792.4	1,792.5	0.85	-0.84	0.11	



Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #947H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3617.0usft (UDI #40)
Site:	Burch-Keely Unit 947H	MD Reference:	WELL @ 3617.0usft (UDI #40)
Well:	#947H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

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)
6,541.0	91.20	268.90	4,825.2	36.1	-1,887.4	1,887.5	0.74	0.74	-0.11
6,636.0	90.70	268.20	4,823.6	33.7	-1,982.4	1,982.4	0.91	-0.53	-0.74
6,731.0	91.60	267.70	4,821.7	30.3	-2,077.3	2,077.3	1.08	0.95	-0.53
6,826.0	90.70	269.60	4,819.8	28.0	-2,172.2	2,172.3	2.21	-0.95	2.00
6,921.0	91.40	270.40	4,818.1	28.0	-2,267.2	2,267.3	1.12	0.74	0.84
7,016.0	90.50	269.90	4,816.5	28.3	-2,362.2	2,362.2	1.08	-0.95	-0.53
7,111.0	91.30	270.10	4,815.0	28.3	-2,457.2	2,457.2	0.87	0.84	0.21
7,207.0	90.00	269.30	4,813.9	27.8	-2,553.2	2,553.2	1.59	-1.35	-0.83
7,302.0	90.70	269.40	4,813.4	26.7	-2,648.2	2,648.2	0.74	0.74	0.11
7,397.0	90.50	270.70	4,812.4	26.8	-2,743.2	2,743.2	1.38	-0.21	1.37
7,492.0	90.90	271.40	4,811.2	28.5	-2,838.1	2,838.2	0.85	0.42	0.74
7,587.0	91.40	272.20	4,809.3	31.5	-2,933.1	2,933.1	0.99	0.53	0.84
7,682.0	92.40	271.90	4,806.1	34.9	-3,028.0	3,028.0	1.10	1.05	-0.32
7,777.0	93.70	272.40	4,801.1	38.5	-3,122.8	3,122.8	1.47	1.37	0.53
7,873.0	91.30	272.60	4,796.9	42.6	-3,218.6	3,218.6	2.51	-2.50	0.21
7,968.0	91.10	272.60	4,794.9	46.9	-3,313.5	3,313.5	0.21	-0.21	0.00
8,063.0	90.50	272.30	4,793.6	51.0	-3,408.4	3,408.4	0.71	-0.63	-0.32
8,158.0	91.10	271.10	4,792.3	53.8	-3,503.3	3,503.4	1.41	0.63	-1.26
8,253.0	90.20	270.00	4,791.2	54.7	-3,598.3	3,598.4	1.50	-0.95	-1.16
8,348.0	90.30	270.30	4,790.8	55.0	-3,693.3	3,693.4	0.33	0.11	0.32
8,444.0	90.80	270.10	4,789.8	55.3	-3,789.3	3,789.3	0.56	0.52	-0.21
8,539.0	90.50	270.00	4,788.8	55.4	-3,884.3	3,884.3	0.33	-0.32	-0.11
8,634.0	90.70	269.90	4,787.8	55.3	-3,979.3	3,979.3	0.24	0.21	-0.11
8,729.0	91.00	270.30	4,786.4	55.5	-4,074.3	4,074.3	0.53	0.32	0.42
8,824.0	90.10	269.40	4,785.4	55.2	-4,169.3	4,169.3	1.34	-0.95	-0.95
8,920.0	90.70	269.90	4,784.8	54.7	-4,265.2	4,265.3	0.81	0.63	0.52
9,015.0	90.80	268.70	4,783.5	53.5	-4,360.2	4,360.3	1.27	0.11	-1.26
9,110.0	91.50	268.50	4,781.6	51.2	-4,455.2	4,455.2	0.77	0.74	-0.21
9,205.0	91.90	268.00	4,778.8	48.3	-4,550.1	4,550.2	0.67	0.42	-0.53
9,261.0	91.90	268.00	4,777.0	46.3	-4,606.0	4,606.1	0.00	0.00	0.00

BHL - 9261.0' MD, 4777.0' TVD, 91.90° INC, 268.00° AZI, 46.3' N, -4606.0' E, 4606.1' VS

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
4,242.0	4,241.0	-63.0	42.2	Gyro Tie in @ 4242' MD
4,320.0	4,319.0	-63.4	42.5	KOP - 4320.0' MD, 4319.0' TVD, 0.20° INC, 102.80° AZI, -42.6' VS
4,984.9	4,802.0	0.0	-337.2	Cross into 330 Lease - 4984.9' MD, 4802.0' TVD, 74.49° INC, 279.19° AZI, 337.
5,575.0	4,842.0	39.8	-921.7	EOC - 5575.0' MD, 4842.0' TVD, 91.00° INC, 271.09° AZI, 921.7' VS
9,261.0	4,777.0	46.3	-4,606.0	BHL - 9261.0' MD, 4777.0' TVD, 91.90° INC, 268.00° AZI, 46.3' N, -4606.0' E, 4