



15-41142

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 12 2015

RECEIVED

October 31, 2014

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanicia Castillo

RE: **SRO State Com 44H**

Please find enclosed a copy of the survey from 0.00' to 2393.00' ran on the above referenced well.

Sincerely,

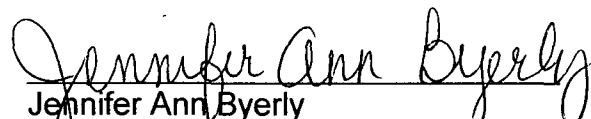

Keith Havelka
Operations

STATE OF TEXAS §

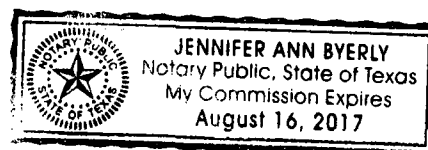
§

COUNTY OF NUECES §

This instrument was acknowledged before me on the 31 day of October, A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas

VES Survey International
P.O. Box 261021 Corpus Christi, TX 78426
T (361) 767-0602 F (361) 767-0612
www.vessurvey.com





Company: Concho
Lease/Well: SRO State Com/44H

Rig Name: Scan Freedom
State/County: New Mexico/Eddy
Latitude: 32.02, Longitude: -104.11
GRID North is 0.12 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : 27 feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 10/31/2014 / 14:33

VES Survey International
Midland, Texas
432-563-5444
Surveyor: Adam Askew
SRO State Com 44H / API 30-015-41142

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 12 2015

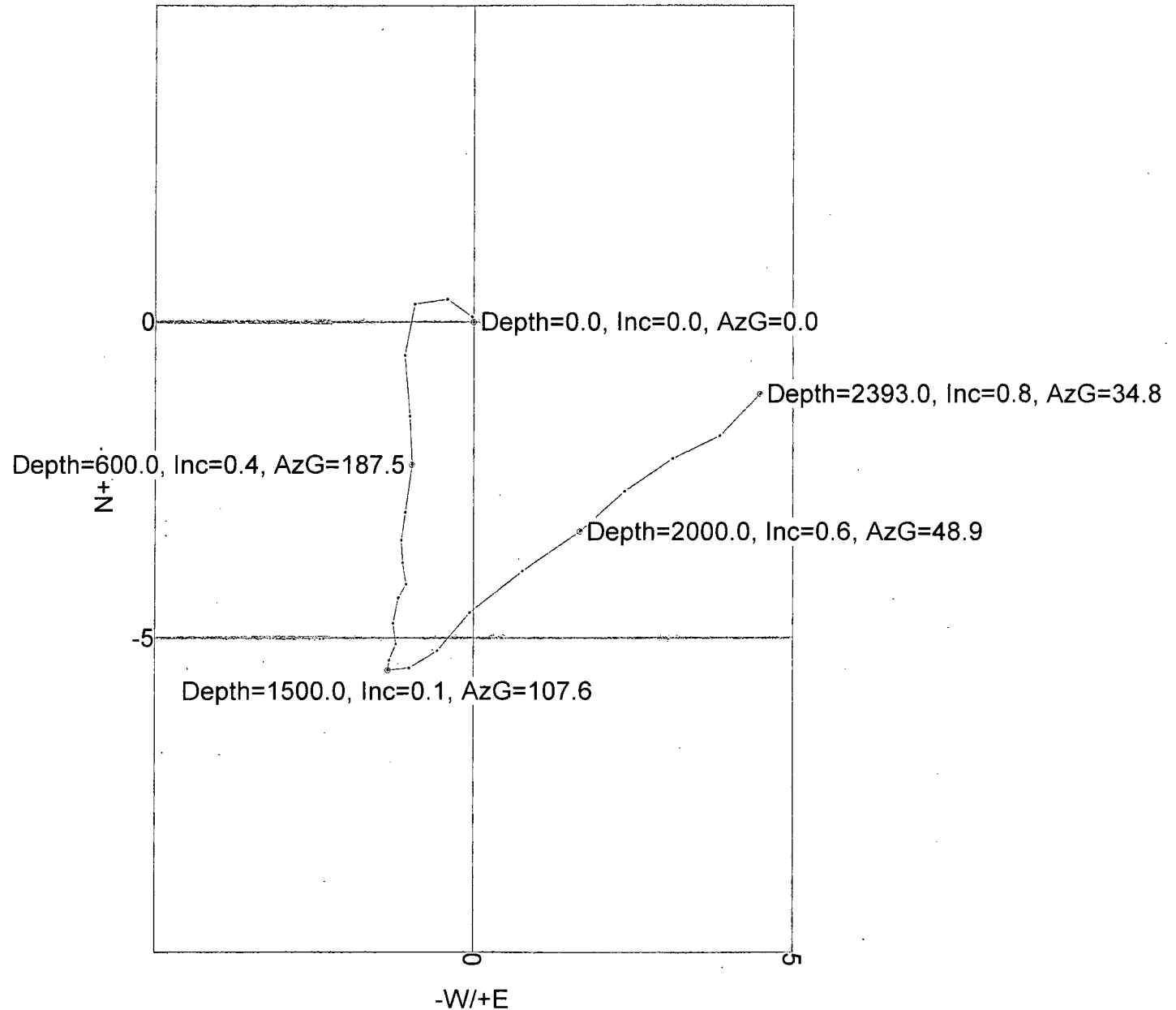
RECEIVED

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	0.10	340.15	100.00	0.08	-0.03	0.08	0.08	340.15	0.10
200.00	0.47	299.04	200.00	0.36	-0.41	0.36	0.55	310.66	0.40
300.00	0.36	209.52	300.00	0.28	-0.93	0.28	0.97	287.08	0.59
400.00	0.63	179.93	399.99	-0.53	-1.08	-0.53	1.20	243.76	0.36
500.00	0.48	169.11	499.99	-1.49	-1.00	-1.49	1.79	213.80	0.18
600.00	0.41	187.46	599.99	-2.26	-0.96	-2.26	2.45	203.14	0.16
700.00	0.47	188.28	699.98	-3.02	-1.07	-3.02	3.20	199.53	0.06
800.00	0.04	182.05	799.98	-3.46	-1.13	-3.46	3.64	198.10	0.43
900.00	0.36	176.70	899.98	-3.81	-1.11	-3.81	3.97	196.29	0.32
1000.00	0.05	121.34	999.98	-4.15	-1.06	-4.15	4.28	194.30	0.34
1100.00	0.28	218.66	1099.98	-4.37	-1.18	-4.37	4.52	195.08	0.30
1200.00	0.25	160.84	1199.98	-4.77	-1.26	-4.77	4.93	194.81	0.26
1300.00	0.15	192.54	1299.98	-5.10	-1.22	-5.10	5.24	193.43	0.15
1400.00	0.18	210.18	1399.98	-5.36	-1.32	-5.36	5.52	193.87	0.06
1500.00	0.08	107.65	1499.98	-5.51	-1.34	-5.51	5.67	193.64	0.21
1600.00	0.31	78.42	1599.98	-5.48	-1.01	-5.48	5.57	190.40	0.25
1700.00	0.32	38.04	1699.98	-5.20	-0.57	-5.20	5.23	186.20	0.22
1800.00	0.58	40.94	1799.97	-4.60	-0.06	-4.60	4.60	180.76	0.26

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	0.65	61.08	1899.97	-3.94	0.77	-3.94	4.02	168.98	0.23
2000.00	0.61	48.95	1999.96	-3.32	1.66	-3.32	3.71	153.37	0.14
2100.00	0.47	45.49	2099.96	-2.68	2.36	-2.68	3.57	138.71	0.14
2200.00	0.59	63.34	2199.95	-2.16	3.11	-2.16	3.79	124.81	0.21
2300.00	0.34	65.08	2299.95	-1.81	3.85	-1.81	4.25	115.12	0.25
2393.00	0.82	34.76	2392.94	-1.14	4.48	-1.14	4.62	104.30	0.59



VES Survey International
Midland, Texas
432-563-5444
Surveyor: Adam Askew
SRO State Com 44H / API 30-015-41142



VES Survey Date: 10/15/2014



NM OIL CONSERVATION

ARTESIA DISTRICT

MAR 12 2015

RECEIVED

COG Operating, LLC

Eddy County, NM (NAD 27)

Sec 17, T26S, R28E

SRO State Unit #44H

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

29 October, 2014





Survey Report - Geographic



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well SRO State Unit #44H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	Well @ 3124.0usft (Scandril Freedom)
Site:	Sec 17, T26S, R28E	MD Reference:	Well @ 3124.0usft (Scandril Freedom)
Well:	SRO State Unit #44H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

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 17, T26S, R28E				
Site Position:		Northing:	381,689.10 usft	Latitude:	32° 2' 57.035 N
From:	Map	Easting:	570,092.60 usft	Longitude:	104° 6' 25.573 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well	SRO State Unit #44H				
Well Position	+N/-S	0.0 usft	Northing:	381,678.80 usft	Latitude: 32° 2' 56.954 N
	+E/-W	0.0 usft	Easting:	569,071.50 usft	Longitude: 104° 6' 37.438 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	0.0 usft	Ground Level: 3,098.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/7/2014	7.41	59.85	48,124

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	179.93	

Survey Program	Date 10/29/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	2,393.0	Gyro (Wellbore #1)	Good_gyro	Good Gyro
2,560.0	17,679.0	DDC MWD (Wellbore #1)	Good_gyro	Good Gyro

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	381,678.80	569,071.50	32° 2' 56.954 N	104° 6' 37.438 W	
100.0	0.10	340.15	100.0	0.1	0.0	381,678.88	569,071.47	32° 2' 56.955 N	104° 6' 37.438 W	
200.0	0.47	299.04	200.0	0.4	-0.4	381,679.16	569,071.08	32° 2' 56.958 N	104° 6' 37.443 W	
300.0	0.36	209.52	300.0	0.3	-0.9	381,679.09	569,070.57	32° 2' 56.957 N	104° 6' 37.449 W	
400.0	0.63	179.93	400.0	-0.5	-1.1	381,678.26	569,070.42	32° 2' 56.949 N	104° 6' 37.451 W	
500.0	0.48	169.11	500.0	-1.5	-1.0	381,677.30	569,070.50	32° 2' 56.939 N	104° 6' 37.450 W	
600.0	0.41	187.46	600.0	-2.3	-1.0	381,676.54	569,070.53	32° 2' 56.932 N	104° 6' 37.449 W	
700.0	0.47	188.28	700.0	-3.0	-1.1	381,675.78	569,070.42	32° 2' 56.924 N	104° 6' 37.451 W	
800.0	0.04	182.05	800.0	-3.5	-1.1	381,675.34	569,070.36	32° 2' 56.920 N	104° 6' 37.451 W	
900.0	0.36	176.70	900.0	-3.8	-1.1	381,674.99	569,070.38	32° 2' 56.916 N	104° 6' 37.451 W	
1,000.0	0.05	121.34	1,000.0	-4.1	-1.1	381,674.65	569,070.44	32° 2' 56.913 N	104° 6' 37.451 W	



Survey Report - Geographic



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well SRO State Unit #44H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	Well @ 3124.0usft (Scandill Freedom)
Site:	Sec 17, T26S, R28E	MD Reference:	Well @ 3124.0usft (Scandill Freedom)
Well:	SRO State Unit #44H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,100.0	0.28	218.66	1,100.0	-4.4	-1.2	381,674.44	569,070.32	32° 2' 56.911 N	104° 6' 37.452 W
1,200.0	0.25	160.84	1,200.0	-4.8	-1.3	381,674.04	569,070.24	32° 2' 56.907 N	104° 6' 37.453 W
1,300.0	0.15	192.54	1,300.0	-5.1	-1.2	381,673.71	569,070.28	32° 2' 56.904 N	104° 6' 37.452 W
1,400.0	0.18	210.18	1,400.0	-5.4	-1.3	381,673.44	569,070.18	32° 2' 56.901 N	104° 6' 37.454 W
1,500.0	0.08	107.65	1,500.0	-5.5	-1.3	381,673.29	569,070.16	32° 2' 56.900 N	104° 6' 37.454 W
1,600.0	0.31	78.42	1,600.0	-5.5	-1.0	381,673.32	569,070.49	32° 2' 56.900 N	104° 6' 37.450 W
1,700.0	0.32	38.04	1,700.0	-5.2	-0.6	381,673.59	569,070.93	32° 2' 56.903 N	104° 6' 37.445 W
1,800.0	0.58	40.94	1,800.0	-4.6	-0.1	381,674.20	569,071.44	32° 2' 56.909 N	104° 6' 37.439 W
1,900.0	0.65	61.08	1,900.0	-3.9	0.8	381,674.85	569,072.26	32° 2' 56.915 N	104° 6' 37.429 W
2,000.0	0.61	48.95	2,000.0	-3.3	1.7	381,675.48	569,073.16	32° 2' 56.921 N	104° 6' 37.419 W
2,100.0	0.47	45.49	2,100.0	-2.7	2.4	381,676.11	569,073.86	32° 2' 56.928 N	104° 6' 37.411 W
2,200.0	0.59	63.64	2,200.0	-2.2	3.1	381,676.63	569,074.61	32° 2' 56.933 N	104° 6' 37.402 W
2,300.0	0.34	65.08	2,299.9	-1.8	3.8	381,676.98	569,075.34	32° 2' 56.936 N	104° 6' 37.394 W
2,393.0	0.82	34.76	2,392.9	-1.2	4.5	381,677.65	569,075.97	32° 2' 56.943 N	104° 6' 37.386 W
Tie In @ 2393' MD / 2393' TVD									
2,560.0	0.10	33.00	2,559.9	0.0	5.2	381,678.75	569,076.73	32° 2' 56.954 N	104° 6' 37.377 W
2,749.0	0.10	116.60	2,748.9	0.0	5.5	381,678.81	569,076.97	32° 2' 56.954 N	104° 6' 37.375 W
2,938.0	0.20	237.20	2,937.9	-0.2	5.3	381,678.56	569,076.84	32° 2' 56.952 N	104° 6' 37.376 W
3,127.0	0.30	201.90	3,126.9	-0.9	4.9	381,677.92	569,076.38	32° 2' 56.945 N	104° 6' 37.381 W
3,316.0	0.30	198.90	3,315.9	-1.8	4.5	381,677.00	569,076.03	32° 2' 56.936 N	104° 6' 37.385 W
3,505.0	0.30	210.30	3,504.9	-2.7	4.1	381,676.10	569,075.62	32° 2' 56.927 N	104° 6' 37.390 W
3,694.0	0.30	183.30	3,693.9	-3.6	3.8	381,675.18	569,075.34	32° 2' 56.918 N	104° 6' 37.394 W
3,883.0	0.40	230.40	3,882.9	-4.5	3.3	381,674.27	569,074.81	32° 2' 56.909 N	104° 6' 37.400 W
4,072.0	0.30	214.20	4,071.9	-5.4	2.5	381,673.44	569,074.02	32° 2' 56.901 N	104° 6' 37.409 W
4,261.0	0.40	212.10	4,260.9	-6.3	1.9	381,672.47	569,073.39	32° 2' 56.891 N	104° 6' 37.416 W
4,449.0	0.70	186.80	4,448.9	-8.0	1.4	381,670.77	569,072.91	32° 2' 56.875 N	104° 6' 37.422 W
4,638.0	0.50	202.90	4,637.9	-9.9	0.9	381,668.87	569,072.45	32° 2' 56.856 N	104° 6' 37.427 W
4,828.0	0.70	196.40	4,827.9	-11.8	0.3	381,666.99	569,071.80	32° 2' 56.837 N	104° 6' 37.435 W
5,016.0	0.90	196.30	5,015.9	-14.3	-0.4	381,664.47	569,071.06	32° 2' 56.812 N	104° 6' 37.444 W
5,205.0	0.10	76.60	5,204.9	-15.7	-0.7	381,663.08	569,070.80	32° 2' 56.799 N	104° 6' 37.447 W
5,394.0	0.80	288.50	5,393.9	-15.3	-1.8	381,663.54	569,069.71	32° 2' 56.803 N	104° 6' 37.459 W
5,583.0	1.00	116.80	5,582.8	-15.6	-1.6	381,663.22	569,069.93	32° 2' 56.800 N	104° 6' 37.457 W
5,772.0	0.50	84.80	5,771.8	-16.3	0.7	381,662.55	569,072.23	32° 2' 56.793 N	104° 6' 37.430 W
5,961.0	0.60	147.10	5,960.8	-17.0	2.1	381,661.79	569,073.59	32° 2' 56.786 N	104° 6' 37.414 W
6,150.0	0.90	184.30	6,149.8	-19.3	2.5	381,659.48	569,074.01	32° 2' 56.763 N	104° 6' 37.409 W
6,339.0	1.40	165.50	6,338.8	-23.0	3.0	381,655.76	569,074.48	32° 2' 56.726 N	104° 6' 37.404 W
6,528.0	1.20	153.40	6,527.7	-27.0	4.4	381,651.76	569,075.94	32° 2' 56.686 N	104° 6' 37.387 W
6,718.0	0.40	140.40	6,717.7	-29.3	5.8	381,649.47	569,077.26	32° 2' 56.664 N	104° 6' 37.372 W
6,908.0	0.60	0.80	6,907.7	-28.8	6.2	381,649.95	569,077.69	32° 2' 56.669 N	104° 6' 37.367 W
7,097.0	1.10	142.10	7,096.7	-29.3	7.3	381,649.51	569,078.82	32° 2' 56.664 N	104° 6' 37.354 W
7,287.0	0.40	154.10	7,286.7	-31.3	8.7	381,647.47	569,080.23	32° 2' 56.644 N	104° 6' 37.337 W
7,382.0	0.70	171.50	7,381.7	-32.2	9.0	381,646.60	569,080.46	32° 2' 56.635 N	104° 6' 37.335 W
7,415.0	1.00	174.10	7,414.7	-32.7	9.0	381,646.12	569,080.52	32° 2' 56.631 N	104° 6' 37.334 W
7,446.0	3.20	167.80	7,445.6	-33.8	9.2	381,645.00	569,080.73	32° 2' 56.620 N	104° 6' 37.332 W
7,478.0	6.50	171.10	7,477.5	-36.5	9.7	381,642.34	569,081.20	32° 2' 56.593 N	104° 6' 37.326 W
7,509.0	10.70	176.10	7,508.2	-41.1	10.2	381,637.73	569,081.67	32° 2' 56.548 N	104° 6' 37.321 W
7,541.0	14.50	179.90	7,539.4	-48.0	10.4	381,630.76	569,081.88	32° 2' 56.479 N	104° 6' 37.319 W
7,572.0	18.30	180.60	7,569.1	-56.8	10.3	381,622.01	569,081.83	32° 2' 56.392 N	104° 6' 37.319 W
7,604.0	21.50	180.30	7,599.2	-67.7	10.2	381,611.12	569,081.75	32° 2' 56.284 N	104° 6' 37.321 W
7,636.0	24.90	178.90	7,628.6	-80.3	10.3	381,598.52	569,081.85	32° 2' 56.159 N	104° 6' 37.320 W
7,667.0	27.80	178.70	7,656.4	-94.0	10.6	381,584.76	569,082.14	32° 2' 56.023 N	104° 6' 37.317 W
7,699.0	31.70	179.20	7,684.2	-109.9	10.9	381,568.89	569,082.43	32° 2' 55.866 N	104° 6' 37.314 W
7,730.0	35.30	179.90	7,710.0	-127.0	11.1	381,551.78	569,082.55	32° 2' 55.697 N	104° 6' 37.313 W
7,747.9	36.98	180.19	7,724.5	-137.6	11.0	381,541.22	569,082.55	32° 2' 55.592 N	104° 6' 37.313 W

Crossed 330' Hardline @ 7748' MD / 7725' TVD



Survey Report - Geographic



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well SRO State Unit #44H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	Well @ 3124.0usft (Scandril Freedom)
Site:	Sec 17, T26S, R28E	MD Reference:	Well @ 3124.0usft (Scandril Freedom)
Well:	SRO State Unit #44H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
7,762.0	38.30	180.40	7,735.6	-146.2	11.0	381,532.61	569,082.50	32° 2' 55.507 N	104° 6' 37.314 W	
7,794.0	40.50	181.00	7,760.4	-166.5	10.7	381,512.31	569,082.25	32° 2' 55.306 N	104° 6' 37.317 W	
7,825.0	42.70	180.80	7,783.5	-187.1	10.4	381,491.73	569,081.93	32° 2' 55.103 N	104° 6' 37.321 W	
7,857.0	45.30	180.30	7,806.6	-209.3	10.2	381,469.50	569,081.72	32° 2' 54.883 N	104° 6' 37.324 W	
7,889.0	48.60	180.10	7,828.4	-232.7	10.1	381,446.12	569,081.64	32° 2' 54.651 N	104° 6' 37.326 W	
7,920.0	51.60	179.70	7,848.3	-256.5	10.2	381,422.34	569,081.68	32° 2' 54.416 N	104° 6' 37.326 W	
7,952.0	54.60	179.60	7,867.5	-282.0	10.3	381,396.76	569,081.84	32° 2' 54.163 N	104° 6' 37.325 W	
7,983.0	57.70	180.30	7,884.8	-307.8	10.4	381,371.01	569,081.86	32° 2' 53.908 N	104° 6' 37.325 W	
8,015.0	60.20	180.40	7,901.3	-335.2	10.2	381,343.60	569,081.69	32° 2' 53.637 N	104° 6' 37.328 W	
8,046.0	63.10	180.80	7,916.0	-362.5	9.9	381,316.32	569,081.40	32° 2' 53.367 N	104° 6' 37.332 W	
8,078.0	66.50	181.30	7,929.6	-391.4	9.4	381,287.38	569,080.87	32° 2' 53.080 N	104° 6' 37.339 W	
8,109.0	69.90	181.50	7,941.1	-420.2	8.7	381,258.61	569,080.17	32° 2' 52.796 N	104° 6' 37.347 W	
8,141.0	72.20	182.60	7,951.5	-450.4	7.6	381,228.36	569,079.08	32° 2' 52.496 N	104° 6' 37.361 W	
8,173.0	74.30	182.70	7,960.7	-481.0	6.2	381,197.76	569,077.66	32° 2' 52.193 N	104° 6' 37.378 W	
8,204.0	77.00	182.40	7,968.4	-511.0	4.8	381,167.76	569,076.33	32° 2' 51.896 N	104° 6' 37.394 W	
8,236.0	79.20	182.90	7,975.0	-542.3	3.4	381,136.48	569,074.88	32° 2' 51.587 N	104° 6' 37.412 W	
8,267.0	80.60	182.60	7,980.4	-572.8	1.9	381,106.00	569,073.42	32° 2' 51.285 N	104° 6' 37.430 W	
8,299.0	83.00	182.00	7,985.0	-604.4	0.6	381,074.35	569,072.15	32° 2' 50.972 N	104° 6' 37.445 W	
8,330.0	85.50	181.70	7,988.1	-635.3	-0.4	381,043.53	569,071.15	32° 2' 50.667 N	104° 6' 37.457 W	
8,362.0	86.30	181.70	7,990.4	-667.2	-1.3	381,011.62	569,070.20	32° 2' 50.351 N	104° 6' 37.469 W	
8,393.0	86.90	181.30	7,992.2	-698.1	-2.1	380,980.69	569,069.39	32° 2' 50.045 N	104° 6' 37.479 W	
8,424.0	88.70	180.40	7,993.4	-729.1	-2.6	380,949.72	569,068.93	32° 2' 49.739 N	104° 6' 37.485 W	
8,488.0	90.00	179.40	7,994.2	-793.1	-2.5	380,885.72	569,069.05	32° 2' 49.105 N	104° 6' 37.486 W	
8,583.0	89.50	179.70	7,994.6	-888.1	-1.7	380,790.73	569,069.79	32° 2' 48.165 N	104° 6' 37.479 W	
8,677.0	88.10	179.20	7,996.5	-982.0	-0.8	380,696.75	569,070.69	32° 2' 47.235 N	104° 6' 37.471 W	
8,771.0	89.10	179.70	7,998.8	-1,076.0	0.1	380,602.79	569,071.60	32° 2' 46.305 N	104° 6' 37.463 W	
8,866.0	89.80	179.90	7,999.8	-1,171.0	0.4	380,507.79	569,071.93	32° 2' 45.365 N	104° 6' 37.461 W	
8,961.0	90.40	180.30	7,999.6	-1,266.0	0.3	380,412.79	569,071.76	32° 2' 44.425 N	104° 6' 37.465 W	
9,055.0	91.20	180.10	7,998.3	-1,360.0	-0.1	380,318.80	569,071.43	32° 2' 43.495 N	104° 6' 37.471 W	
9,150.0	91.80	179.70	7,995.8	-1,455.0	0.1	380,223.84	569,071.60	32° 2' 42.555 N	104° 6' 37.472 W	
9,245.0	90.50	179.20	7,993.9	-1,549.9	1.0	380,128.86	569,072.51	32° 2' 41.615 N	104° 6' 37.464 W	
9,339.0	91.40	179.40	7,992.3	-1,643.9	2.2	380,034.88	569,073.66	32° 2' 40.685 N	104° 6' 37.452 W	
9,433.0	89.60	179.00	7,991.5	-1,737.9	3.5	379,940.90	569,074.97	32° 2' 39.755 N	104° 6' 37.439 W	
9,528.0	90.20	178.70	7,991.7	-1,832.9	5.4	379,845.92	569,076.88	32° 2' 38.815 N	104° 6' 37.420 W	
9,622.0	90.90	178.70	7,990.8	-1,926.8	7.5	379,751.95	569,079.01	32° 2' 37.885 N	104° 6' 37.397 W	
9,717.0	89.40	178.70	7,990.5	-2,021.8	9.7	379,656.98	569,081.17	32° 2' 36.945 N	104° 6' 37.374 W	
9,811.0	89.40	181.10	7,991.5	-2,115.8	9.8	379,562.99	569,081.33	32° 2' 36.015 N	104° 6' 37.375 W	
9,905.0	90.40	181.10	7,991.7	-2,209.8	8.0	379,469.01	569,079.53	32° 2' 35.085 N	104° 6' 37.398 W	
10,000.0	91.20	181.10	7,990.3	-2,304.8	6.2	379,374.04	569,077.70	32° 2' 34.145 N	104° 6' 37.421 W	
10,095.0	91.30	179.90	7,988.3	-2,399.7	5.4	379,279.06	569,076.87	32° 2' 33.205 N	104° 6' 37.433 W	
10,189.0	90.00	180.80	7,987.2	-2,493.7	4.8	379,185.07	569,076.30	32° 2' 32.275 N	104° 6' 37.442 W	
10,284.0	91.30	181.10	7,986.1	-2,588.7	3.2	379,090.10	569,074.72	32° 2' 31.335 N	104° 6' 37.463 W	
10,378.0	90.00	182.20	7,985.1	-2,682.7	0.5	378,996.14	569,072.02	32° 2' 30.405 N	104° 6' 37.496 W	
10,473.0	90.80	181.00	7,984.4	-2,777.6	-2.1	378,901.19	569,069.37	32° 2' 29.465 N	104° 6' 37.530 W	
10,567.0	91.40	179.60	7,982.6	-2,871.6	-2.6	378,807.21	569,068.87	32° 2' 28.535 N	104° 6' 37.537 W	
10,661.0	90.70	178.20	7,980.9	-2,965.6	-0.8	378,713.24	569,070.68	32° 2' 27.605 N	104° 6' 37.519 W	
10,756.0	89.20	178.30	7,980.9	-3,060.5	2.1	378,618.29	569,073.58	32° 2' 26.666 N	104° 6' 37.487 W	
10,850.0	89.80	178.30	7,981.8	-3,154.5	4.9	378,524.34	569,076.37	32° 2' 25.736 N	104° 6' 37.457 W	
10,945.0	90.30	178.20	7,981.7	-3,249.4	7.8	378,429.38	569,079.27	32° 2' 24.796 N	104° 6' 37.426 W	
11,040.0	91.30	178.00	7,980.4	-3,344.4	10.9	378,334.44	569,082.42	32° 2' 23.856 N	104° 6' 37.391 W	
11,134.0	90.00	178.30	7,979.3	-3,438.3	13.9	378,240.50	569,085.45	32° 2' 22.926 N	104° 6' 37.358 W	
11,229.0	89.20	180.10	7,980.0	-3,533.3	15.3	378,145.52	569,086.78	32° 2' 21.986 N	104° 6' 37.345 W	
11,323.0	90.00	180.30	7,980.6	-3,627.3	14.9	378,051.52	569,086.45	32° 2' 21.056 N	104° 6' 37.351 W	
11,417.0	90.70	180.10	7,980.0	-3,721.3	14.6	377,957.52	569,086.12	32° 2' 20.126 N	104° 6' 37.357 W	
11,511.0	91.40	179.90	7,978.3	-3,815.3	14.6	377,863.54	569,086.12	32° 2' 19.196 N	104° 6' 37.360 W	



Survey Report - Geographic



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well SRO State Unit #44H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	Well @ 3124.0usft (Scandill Freedom)
Site:	Sec 17, T26S, R28E	MD Reference:	Well @ 3124.0usft (Scandill Freedom)
Well:	SRO State Unit #44H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,605.0	90.50	180.80	7,976.8	-3,909.2	14.0	377,769.56	569,085.55	32° 2' 18.266 N	104° 6' 37.369 W
11,699.0	91.30	180.80	7,975.3	-4,003.2	12.7	377,675.58	569,084.24	32° 2' 17.336 N	104° 6' 37.386 W
11,793.0	90.10	180.10	7,974.1	-4,097.2	12.0	377,581.59	569,083.50	32° 2' 16.406 N	104° 6' 37.397 W
11,887.0	91.20	180.30	7,973.1	-4,191.2	11.7	377,487.60	569,083.17	32° 2' 15.475 N	104° 6' 37.403 W
11,980.0	90.00	180.30	7,972.1	-4,284.2	11.2	377,394.61	569,082.68	32° 2' 14.555 N	104° 6' 37.411 W
12,074.0	90.70	179.90	7,971.5	-4,378.2	11.0	377,300.61	569,082.52	32° 2' 13.625 N	104° 6' 37.415 W
12,168.0	91.40	179.70	7,969.8	-4,472.2	11.3	377,206.63	569,082.85	32° 2' 12.695 N	104° 6' 37.414 W
12,262.0	90.30	180.10	7,968.4	-4,566.2	11.5	377,112.64	569,083.01	32° 2' 11.764 N	104° 6' 37.414 W
12,356.0	91.40	180.10	7,967.0	-4,660.1	11.3	377,018.65	569,082.85	32° 2' 10.834 N	104° 6' 37.418 W
12,450.0	90.00	181.00	7,965.9	-4,754.1	10.4	376,924.66	569,081.94	32° 2' 9.904 N	104° 6' 37.431 W
12,544.0	89.30	181.00	7,966.4	-4,848.1	8.8	376,830.68	569,080.30	32° 2' 8.974 N	104° 6' 37.452 W
12,638.0	89.50	180.60	7,967.4	-4,942.1	7.5	376,736.70	569,078.99	32° 2' 8.044 N	104° 6' 37.470 W
12,732.0	90.10	180.30	7,967.7	-5,036.1	6.8	376,642.70	569,078.25	32° 2' 7.114 N	104° 6' 37.480 W
12,788.0	90.76	180.18	7,967.3	-5,092.1	6.5	376,586.70	569,078.02	32° 2' 6.560 N	104° 6' 37.484 W
Crossed Section Line @ 12788' MD / 7967' TVD									
12,826.0	91.20	180.10	7,966.7	-5,130.1	6.4	376,548.71	569,077.92	32° 2' 6.184 N	104° 6' 37.486 W
12,920.0	92.30	179.40	7,963.8	-5,224.0	6.8	376,454.76	569,078.33	32° 2' 5.254 N	104° 6' 37.484 W
13,013.0	90.90	179.60	7,961.2	-5,317.0	7.6	376,361.80	569,079.15	32° 2' 4.334 N	104° 6' 37.477 W
13,107.0	89.10	179.60	7,961.2	-5,411.0	8.3	376,267.80	569,079.80	32° 2' 3.404 N	104° 6' 37.471 W
13,201.0	89.10	180.30	7,962.7	-5,505.0	8.4	376,173.82	569,079.88	32° 2' 2.473 N	104° 6' 37.473 W
13,295.0	89.20	180.40	7,964.1	-5,599.0	7.8	376,079.83	569,079.31	32° 2' 1.543 N	104° 6' 37.482 W
13,389.0	90.00	180.60	7,964.7	-5,693.0	7.0	375,985.83	569,078.49	32° 2' 0.613 N	104° 6' 37.493 W
13,484.0	90.20	181.30	7,964.6	-5,788.0	5.4	375,890.85	569,076.91	32° 1' 59.673 N	104° 6' 37.514 W
13,578.0	90.70	180.30	7,963.8	-5,881.9	4.1	375,796.86	569,075.60	32° 1' 58.743 N	104° 6' 37.531 W
13,672.0	90.50	180.60	7,962.9	-5,975.9	3.4	375,702.87	569,074.86	32° 1' 57.813 N	104° 6' 37.542 W
13,766.0	90.10	179.40	7,962.4	-6,069.9	3.4	375,608.87	569,074.86	32° 1' 56.882 N	104° 6' 37.545 W
13,860.0	90.40	179.20	7,961.9	-6,163.9	4.5	375,514.88	569,076.01	32° 1' 55.952 N	104° 6' 37.533 W
13,954.0	90.50	180.10	7,961.2	-6,257.9	5.1	375,420.89	569,076.59	32° 1' 55.022 N	104° 6' 37.529 W
14,048.0	90.00	180.60	7,960.8	-6,351.9	4.5	375,326.89	569,076.01	32° 1' 54.092 N	104° 6' 37.538 W
14,142.0	90.60	180.40	7,960.3	-6,445.9	3.7	375,232.90	569,075.19	32° 1' 53.162 N	104° 6' 37.550 W
14,236.0	90.60	180.40	7,959.3	-6,539.9	3.0	375,138.90	569,074.54	32° 1' 52.231 N	104° 6' 37.560 W
14,330.0	90.50	180.80	7,958.4	-6,633.9	2.0	375,044.91	569,073.55	32° 1' 51.301 N	104° 6' 37.573 W
14,425.0	90.60	179.70	7,957.5	-6,728.9	1.6	374,949.92	569,073.14	32° 1' 50.361 N	104° 6' 37.580 W
14,519.0	90.80	179.70	7,956.4	-6,822.9	2.1	374,855.93	569,073.63	32° 1' 49.431 N	104° 6' 37.577 W
14,613.0	90.80	179.90	7,955.0	-6,916.9	2.5	374,761.94	569,073.96	32° 1' 48.501 N	104° 6' 37.575 W
14,707.0	90.80	180.10	7,953.7	-7,010.9	2.5	374,667.95	569,073.96	32° 1' 47.571 N	104° 6' 37.578 W
14,801.0	90.70	180.30	7,952.5	-7,104.8	2.1	374,573.96	569,073.63	32° 1' 46.640 N	104° 6' 37.584 W
14,895.0	90.60	179.20	7,951.4	-7,198.8	2.5	374,479.96	569,074.04	32° 1' 45.710 N	104° 6' 37.581 W
14,989.0	90.60	179.60	7,950.5	-7,292.8	3.5	374,385.97	569,075.02	32° 1' 44.780 N	104° 6' 37.572 W
15,083.0	90.80	178.90	7,949.3	-7,386.8	4.8	374,291.99	569,076.25	32° 1' 43.850 N	104° 6' 37.560 W
15,178.0	90.90	178.70	7,947.9	-7,481.8	6.7	374,197.02	569,078.24	32° 1' 42.910 N	104° 6' 37.539 W
15,272.0	89.90	179.70	7,947.2	-7,575.8	8.1	374,103.04	569,079.56	32° 1' 41.980 N	104° 6' 37.526 W
15,366.0	89.90	179.60	7,947.4	-7,669.8	8.6	374,009.04	569,080.13	32° 1' 41.049 N	104° 6' 37.522 W
15,460.0	90.50	179.70	7,947.1	-7,763.8	9.2	373,915.04	569,080.70	32° 1' 40.119 N	104° 6' 37.517 W
15,554.0	90.60	179.70	7,946.2	-7,857.8	9.7	373,821.05	569,081.20	32° 1' 39.189 N	104° 6' 37.514 W
15,649.0	90.60	179.60	7,945.2	-7,952.7	10.3	373,726.05	569,081.78	32° 1' 38.249 N	104° 6' 37.509 W
15,743.0	90.50	179.90	7,944.3	-8,046.7	10.7	373,632.06	569,082.19	32° 1' 37.319 N	104° 6' 37.507 W
15,837.0	90.20	179.60	7,943.7	-8,140.7	11.1	373,538.06	569,082.60	32° 1' 36.388 N	104° 6' 37.504 W
15,931.0	90.00	179.90	7,943.5	-8,234.7	11.5	373,444.06	569,083.01	32° 1' 35.458 N	104° 6' 37.502 W
16,026.0	90.80	179.70	7,942.9	-8,329.7	11.8	373,349.07	569,083.34	32° 1' 34.518 N	104° 6' 37.500 W
16,120.0	90.80	179.70	7,941.6	-8,423.7	12.3	373,255.08	569,083.83	32° 1' 33.588 N	104° 6' 37.497 W
16,214.0	91.10	179.70	7,940.0	-8,517.7	12.8	373,161.09	569,084.32	32° 1' 32.658 N	104° 6' 37.493 W
16,308.0	91.00	180.10	7,938.3	-8,611.7	13.0	373,067.11	569,084.49	32° 1' 31.727 N	104° 6' 37.494 W
16,402.0	91.10	180.40	7,936.6	-8,705.7	12.6	372,973.12	569,084.08	32° 1' 30.797 N	104° 6' 37.501 W
16,496.0	91.10	181.00	7,934.8	-8,799.7	11.4	372,879.15	569,082.93	32° 1' 29.867 N	104° 6' 37.516 W



Survey Report - Geographic



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well SRO State Unit #44H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	Well @ 3124.0usft (Scandril Freedom)
Site:	Sec 17, T26S, R28E	MD Reference:	Well @ 3124.0usft (Scandril Freedom)
Well:	SRO State Unit #44H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
16,590.0	90.90	181.30	7,933.1	-8,893.6	9.5	372,785.18	569,081.04	32° 1' 28.937 N	104° 6' 37.540 W	
16,684.0	89.90	180.10	7,932.5	-8,987.6	8.4	372,691.19	569,079.89	32° 1' 28.007 N	104° 6' 37.556 W	
16,873.0	89.70	180.60	7,933.1	-9,176.6	7.2	372,502.20	569,078.74	32° 1' 26.137 N	104° 6' 37.574 W	
17,036.0	90.00	180.40	7,933.5	-9,339.6	5.8	372,339.21	569,077.32	32° 1' 24.524 N	104° 6' 37.594 W	
17,155.0	89.80	180.40	7,933.8	-9,458.6	5.0	372,220.21	569,076.49	32° 1' 23.346 N	104° 6' 37.607 W	
17,263.0	88.90	180.10	7,935.0	-9,566.6	4.5	372,112.22	569,076.01	32° 1' 22.277 N	104° 6' 37.615 W	
17,343.0	88.70	179.60	7,936.7	-9,646.6	4.7	372,032.24	569,076.22	32° 1' 21.486 N	104° 6' 37.614 W	
17,437.0	88.60	179.20	7,938.9	-9,740.5	5.7	371,938.27	569,077.21	32° 1' 20.556 N	104° 6' 37.605 W	
17,531.0	89.00	179.70	7,940.8	-9,834.5	6.6	371,844.29	569,078.11	32° 1' 19.626 N	104° 6' 37.597 W	
17,625.0	88.70	179.60	7,942.7	-9,928.5	7.2	371,750.31	569,078.68	32° 1' 18.696 N	104° 6' 37.593 W	
17,679.0	88.70	179.60	7,943.9	-9,982.5	7.6	371,696.33	569,079.06	32° 1' 18.161 N	104° 6' 37.590 W	
TD @ 17679' MD / 7944' TVD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
2,393.0	2,392.9	-1.2	4.5	Tie In @ 2393' MD / 2393' TVD	
7,747.9	7,724.5	-137.6	11.0	Crossed 330' Hardline @ 7748' MD / 7725' TVD	
12,788.0	7,967.3	-5,092.1	6.5	Crossed Section Line @ 12788' MD / 7967' TVD	
17,679.0	7,943.9	-9,982.5	7.6	TD @ 17679' MD / 7944' TVD	

Checked By: _____	Approved By: _____	Date: _____
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