

A GYRO TECHNOLOGIES INC. COMPANY

P.O. Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

30-015-38507

January 23, 2014

COG Operating LLC (Concho)
One Concho Center
600 W. Illinois Avenue
Midland, TX 79701

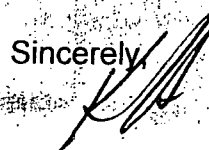
Attn: Kanicia Castillo

Re: Cottonmouth 24 Federal Com No 001H

Please find enclosed a copy of the survey from 0' to 9,527' ran on the above referenced well

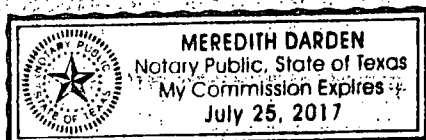
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
§
COUNTY OF NUECES §

This instrument was acknowledged before me on the 23rd day of January
A.D., 2014, by Keith Havelka.




Meredith Darden
Notary Public, State of Texas



Company: COG Operating-Concho
Lease/Well: Cottonmouth 24 Federal Com/No 001H
Location: S24 T26S R28E
Rig Name: Silver Oak 7
State/County: New Mexico/Eddy
Latitude: 32.02, Longitude: -104.05
GRID North is 0.15 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : R.K.B. = 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 1/23/2014 / 08:37

Vaughn Energy Services

Midland, TX

432-563-5444

Surveyor: Andrew Askew

Cottonmouth 24 Federal Com No 001H / API 30-015-38507

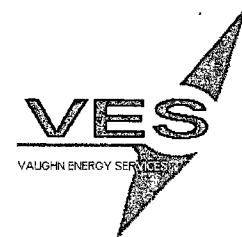
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	1.23	196.55	99.99	-1.03	-0.31	-1.03	1.08	196.55	1.23
200.00	4.21	208.95	199.87	-5.27	-2.39	-5.27	5.79	204.37	3.01
300.00	6.23	214.78	299.45	-12.94	-7.26	-12.94	14.84	209.30	2.09
400.00	8.83	207.90	398.58	-24.19	-13.95	-24.19	27.92	209.98	2.74
500.00	10.38	206.43	497.18	-39.03	-21.55	-39.03	44.59	208.90	1.57
600.00	10.39	209.80	595.54	-54.92	-30.04	-54.92	62.60	208.68	0.61
700.00	9.24	206.73	694.08	-69.92	-38.13	-69.92	79.64	208.61	1.26
800.00	7.90	211.97	792.96	-82.93	-45.39	-82.93	94.53	208.69	1.55
900.00	7.63	207.68	892.04	-94.64	-52.11	-94.64	108.03	208.84	0.64
1000.00	6.86	211.38	991.24	-105.61	-58.30	-105.61	120.64	208.90	0.89
1100.00	5.89	211.00	1090.62	-115.12	-64.06	-115.12	131.74	209.09	0.97
1200.00	5.42	210.86	1190.14	-123.57	-69.12	-123.57	141.59	209.22	0.47
1300.00	4.67	209.05	1289.75	-131.18	-73.52	-131.18	150.38	209.27	0.76
1400.00	3.36	215.55	1389.50	-137.12	-77.20	-137.12	157.36	209.38	1.39
1500.00	2.64	224.00	1489.36	-141.16	-80.50	-141.16	162.50	209.70	0.84
1600.00	2.02	231.64	1589.28	-143.91	-83.48	-143.91	166.37	210.12	0.69
1700.00	1.84	237.06	1689.22	-145.88	-86.22	-145.88	169.45	210.58	0.26
1800.00	1.74	244.01	1789.17	-147.41	-88.92	-147.41	172.16	211.10	0.24

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	1.84	253.24	1889.13	-148.54	-91.82	-148.54	174.63	211.72	0.30
2000.00	0.74	241.96	1989.10	-149.31	-93.93	-149.31	176.39	212.17	1.12
2100.00	0.38	180.71	2089.10	-149.94	-94.50	-149.94	177.23	212.22	0.65
2200.00	0.27	163.46	2189.09	-150.49	-94.43	-150.49	177.67	212.11	0.14
2300.00	1.09	128.29	2289.09	-151.31	-93.62	-151.31	177.93	211.75	0.88
2400.00	1.69	110.07	2389.06	-152.40	-91.49	-152.40	177.75	210.98	0.74
2500.00	1.57	96.53	2489.02	-153.06	-88.74	-153.06	176.93	210.10	0.40
2600.00	1.53	100.04	2588.98	-153.45	-86.06	-153.45	175.94	209.29	0.10
2700.00	1.19	102.69	2688.95	-153.91	-83.73	-153.91	175.22	208.55	0.34
2800.00	0.76	100.62	2788.94	-154.27	-82.06	-154.27	174.74	208.01	0.43
2900.00	0.88	115.03	2888.93	-154.71	-80.71	-154.71	174.50	207.55	0.24
3000.00	1.01	109.24	2988.91	-155.33	-79.18	-155.33	174.35	207.01	0.16
3100.00	0.80	87.84	3088.90	-155.60	-77.64	-155.60	173.89	206.52	0.40
3200.00	0.50	94.47	3188.89	-155.61	-76.51	-155.61	173.40	206.18	0.31
3300.00	0.60	80.87	3288.89	-155.56	-75.56	-155.56	172.94	205.91	0.17
3400.00	0.59	83.92	3388.88	-155.42	-74.54	-155.42	172.37	205.62	0.03
3500.00	0.26	83.88	3488.88	-155.34	-73.80	-155.34	171.98	205.41	0.32
3600.00	0.11	93.73	3588.88	-155.32	-73.47	-155.32	171.82	205.31	0.15
3700.00	0.05	159.91	3688.88	-155.37	-73.36	-155.37	171.81	205.27	0.10
3800.00	0.05	148.38	3788.88	-155.44	-73.32	-155.44	171.86	205.25	0.01
3900.00	0.11	134.69	3888.88	-155.54	-73.23	-155.54	171.92	205.21	0.07
4000.00	0.09	109.83	3988.88	-155.63	-73.09	-155.63	171.94	205.16	0.05
4100.00	0.35	224.22	4088.88	-155.88	-73.23	-155.88	172.22	205.16	0.39
4200.00	0.33	221.75	4188.88	-156.31	-73.64	-156.31	172.79	205.22	0.02
4300.00	0.32	253.50	4288.88	-156.61	-74.09	-156.61	173.25	205.32	0.18
4400.00	0.46	266.72	4388.87	-156.71	-74.76	-156.71	173.63	205.50	0.16
4500.00	0.68	249.73	4488.87	-156.94	-75.71	-156.94	174.25	205.76	0.28
4600.00	0.49	252.24	4588.86	-157.27	-76.68	-157.27	174.97	205.99	0.19
4700.00	0.88	238.02	4688.86	-157.81	-77.74	-157.81	175.92	206.22	0.42
4800.00	0.64	238.34	4788.85	-158.50	-78.86	-158.50	177.04	206.45	0.24
4900.00	0.53	200.25	4888.84	-159.23	-79.49	-159.23	177.97	206.53	0.39
5000.00	0.59	226.08	4988.84	-160.02	-80.02	-160.02	178.91	206.57	0.26
5100.00	0.62	225.20	5088.83	-160.76	-80.77	-160.76	179.91	206.68	0.03
5200.00	0.80	232.86	5188.83	-161.56	-81.71	-161.56	181.04	206.83	0.21
5300.00	1.28	240.99	5288.81	-162.52	-83.24	-162.52	182.59	207.12	0.50
5400.00	1.20	237.24	5388.79	-163.62	-85.09	-163.62	184.43	207.48	0.11
5500.00	1.08	232.73	5488.77	-164.76	-86.72	-164.76	186.19	207.76	0.15
5600.00	0.98	215.90	5588.75	-166.02	-87.97	-166.02	187.89	207.92	0.32
5700.00	0.91	205.61	5688.74	-167.43	-88.82	-167.43	189.53	207.94	0.19

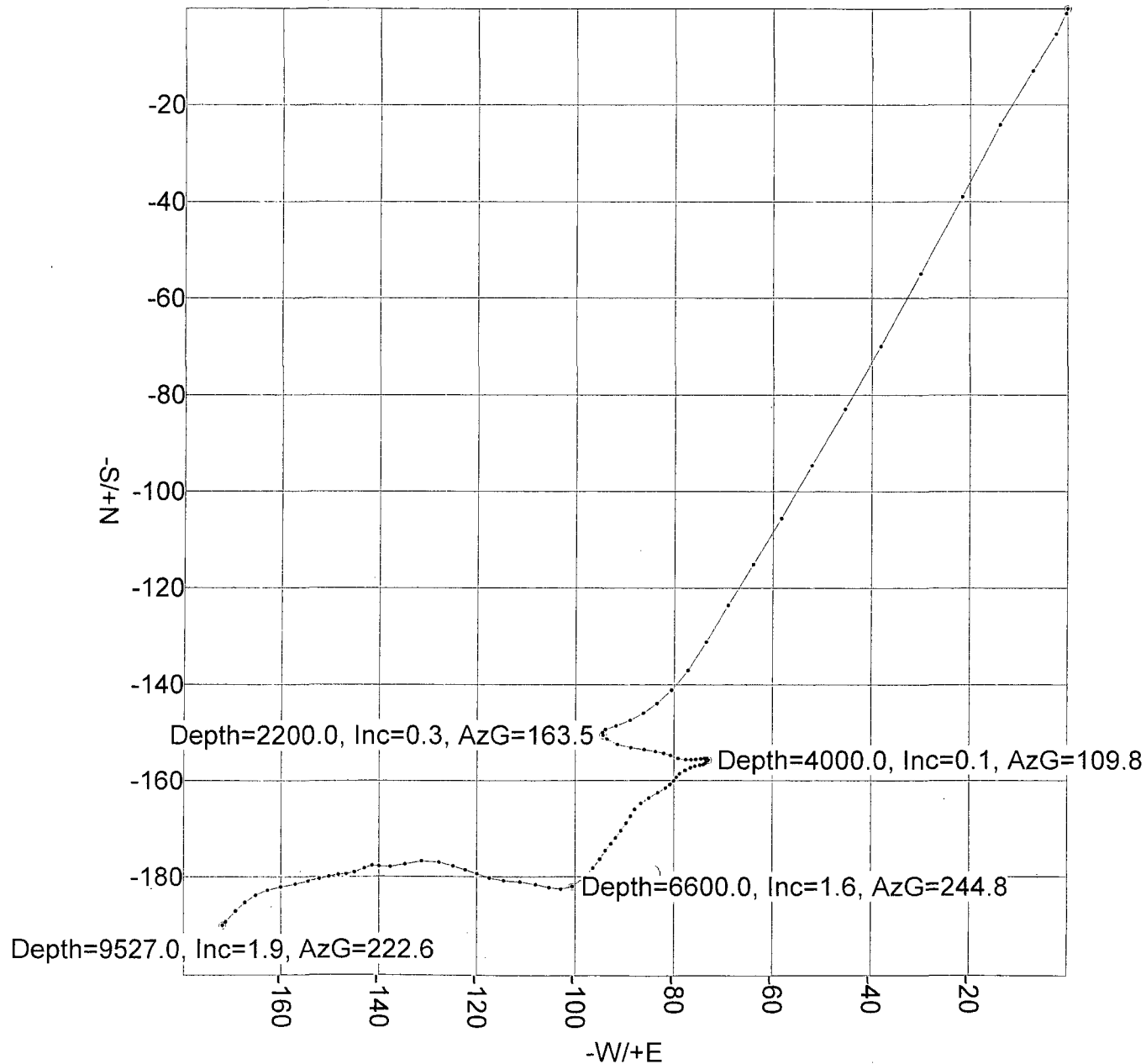
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	1.01	216.61	5788.72	-168.86	-89.69	-168.86	191.20	207.97	0.21
5900.00	1.15	213.86	5888.70	-170.40	-90.77	-170.40	193.07	208.04	0.15
6000.00	0.98	218.24	5988.69	-171.91	-91.86	-171.91	194.91	208.12	0.19
6100.00	0.77	214.26	6088.68	-173.13	-92.77	-173.13	196.42	208.18	0.22
6200.00	1.28	220.24	6188.66	-174.54	-93.87	-174.54	198.18	208.27	0.52
6300.00	1.16	202.94	6288.64	-176.32	-94.98	-176.32	200.28	208.31	0.39
6400.00	1.59	227.73	6388.61	-178.19	-96.41	-178.19	202.60	208.42	0.73
6500.00	1.72	219.16	6488.57	-180.29	-98.38	-180.29	205.39	208.62	0.28
6600.00	1.56	244.77	6588.53	-182.03	-100.56	-182.03	207.96	208.92	0.74
6700.00	1.24	272.50	6688.50	-182.56	-102.87	-182.56	209.55	209.40	0.74
6800.00	1.51	284.07	6788.47	-182.19	-105.23	-182.19	210.40	210.01	0.38
6900.00	1.70	281.93	6888.43	-181.57	-107.95	-181.57	211.24	210.73	0.20
7000.00	1.97	276.32	6988.38	-181.07	-111.11	-181.07	212.45	211.54	0.33
7100.00	1.86	273.54	7088.32	-180.78	-114.44	-180.78	213.96	212.34	0.15
7200.00	1.63	288.16	7188.28	-180.24	-117.41	-180.24	215.11	213.08	0.50
7300.00	1.47	291.54	7288.24	-179.32	-119.96	-179.32	215.75	213.78	0.18
7400.00	1.43	284.03	7388.21	-178.55	-122.36	-178.55	216.45	214.42	0.19
7500.00	1.55	291.94	7488.18	-177.74	-124.83	-177.74	217.20	215.08	0.24
7600.00	1.93	279.87	7588.13	-176.95	-127.74	-176.95	218.24	215.82	0.52
7700.00	2.15	268.20	7688.07	-176.72	-131.27	-176.72	220.14	216.61	0.47
7800.00	1.86	249.66	7788.01	-177.34	-134.67	-177.34	222.68	217.21	0.71
7900.00	1.68	271.00	7887.96	-177.88	-137.66	-177.88	224.93	217.74	0.68
8000.00	0.97	279.68	7987.93	-177.71	-139.96	-177.71	226.21	218.22	0.74
8100.00	0.63	265.27	8087.92	-177.62	-141.34	-177.62	226.99	218.51	0.39
8200.00	1.36	244.83	8187.91	-178.17	-142.96	-178.17	228.43	218.74	0.80
8300.00	1.16	250.65	8287.88	-179.01	-144.99	-179.01	230.36	219.01	0.24
8400.00	0.83	267.55	8387.87	-179.38	-146.68	-179.38	231.71	219.27	0.44
8500.00	1.00	263.22	8487.85	-179.51	-148.27	-179.51	232.83	219.56	0.18
8600.00	1.22	253.06	8587.84	-179.92	-150.15	-179.92	234.34	219.85	0.29
8700.00	1.10	263.28	8687.82	-180.34	-152.12	-180.34	235.93	220.15	0.24
8800.00	1.52	251.51	8787.79	-180.88	-154.33	-180.88	237.77	220.47	0.49
8900.00	1.76	261.55	8887.75	-181.52	-157.10	-181.52	240.06	220.88	0.37
9000.00	1.67	256.54	8987.70	-182.09	-160.04	-182.09	242.42	221.31	0.17
9100.00	1.54	255.33	9087.66	-182.77	-162.76	-182.77	244.74	221.69	0.14
9200.00	1.50	238.87	9187.63	-183.78	-165.18	-183.78	247.11	221.95	0.44
9300.00	1.53	232.60	9287.60	-185.27	-167.36	-185.27	249.67	222.09	0.17
9400.00	1.51	222.89	9387.56	-187.05	-169.32	-187.05	252.30	222.15	0.26
9500.00	1.88	223.19	9487.52	-189.21	-171.34	-189.21	255.26	222.16	0.37
9527.00	1.90	222.60	9514.50	-189.86	-171.95	-189.86	256.15	222.17	0.12



Vaughn Energy Services
Midland, TX
432-563-5444
Surveyor: Andrew Askew
Cottonmouth 24 Federal Com No 001H / API 30-015-38507



Depth=0.0, Inc=0.0, AzG=0.0



VES Survey Date: 12/27/2013



Concho Oil and Gas

Eddy County, N.M. Nad (83)

Section 24-26S-28E Cottonmouth

Cottonmouth "24" Federal Com #1H

Wellbore #1

Design: Wellbore #1

Standard Survey Report

09 January, 2014





Stryker Directional Survey Report



Company:	Concho Oil and Gas	Local Co-ordinate Reference:	Well Cottonmouth "24" Federal Com #1H
Project:	Eddy County, N.M. Nad (83)	TVD Reference:	GL 2961 + 18 @ 2979.0usft (Sliver Oak #7)
Site:	Section 24-26S-28E Cottonmouth	MD Reference:	GL 2961 + 18 @ 2979.0usft (Sliver Oak #7)
Well:	Cottonmouth "24" Federal Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project:	Eddy County, N.M. Nad (83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Section 24-26S-28E Cottonmouth		
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Site Position:		Northing:	371,564.31 usft	Latitude:	32° 1' 16.276 N
From:	Map	Easting:	629,996.63 usft	Longitude:	104° 2' 50.135 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.15 °

Well	Cottonmouth "24" Federal Com #1H					
Well Position	+N/-S	0.0 usft	Northing:	371,564.31 usft	Latitude:	32° 1' 16.276 N
	+E/-W	0.0 usft	Easting:	629,996.63 usft	Longitude:	104° 2' 50.135 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	2,961.0 usft	

Wellbore:	Wellbore #1				
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Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	4/10/2013	(°)	(°)	(nT)
			7.57	59.87	48,263

Design:	Wellbore #1				
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Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0

Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	359.89

Survey Program	Date: 1/9/2014				
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
100.0	5,700.0	VES Gyro Survey #1 (Wellbore #1)	GyroFlex		
5,716.0	11,029.0	MWD Survey #2 (Wellbore #1)	MWD	MWD - Standard	

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	1.23	196.55	100.0	-1.0	-0.3	-1.0	1.23	1.23	0.00
200.0	4.21	208.95	199.9	-5.3	-2.4	-5.3	3.02	2.98	12.40
300.0	6.23	214.78	299.4	-12.9	-7.3	-12.9	2.09	2.02	5.83
400.0	8.83	207.90	398.6	-24.2	-13.9	-24.2	2.75	2.60	-6.88
500.0	10.38	206.43	497.2	-39.0	-21.6	-39.0	1.57	1.55	-1.47
600.0	10.39	209.80	595.5	-54.9	-30.0	-54.9	0.61	0.01	3.37
700.0	9.24	206.73	694.1	-69.9	-38.1	-69.8	1.26	-1.15	-3.07
800.0	7.90	211.97	793.0	-82.9	-45.4	-82.8	1.55	-1.34	5.24
900.0	7.63	207.68	892.0	-94.6	-52.1	-94.5	0.64	-0.27	-4.29



Stryker Directional Survey Report



Company:	Concho Oil and Gas	Local Co-ordinate Reference:	Well Cottonmouth "24" Federal Com #1H
Project:	Eddy County, N.M. Nad (83)	TVD Reference:	GL 2961 + 18 @ 2979.0usft (Sliver Oak #7)
Site:	Section 24-26S-28E Cottonmouth	MD Reference:	GL 2961 + 18 @ 2979.0usft (Sliver Oak #7)
Well:	Cottonmouth "24" Federal Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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)
1,000.0	6.86	211.38	991.2	-105.6	-58.3	-105.5	0.90	-0.77	3.70
1,100.0	5.89	211.00	1,090.6	-115.1	-64.1	-115.0	0.97	-0.97	-0.38
1,200.0	5.42	210.86	1,190.1	-123.6	-69.1	-123.4	0.47	-0.47	-0.14
1,300.0	4.67	209.05	1,289.7	-131.2	-73.5	-131.0	0.77	-0.75	-1.81
1,400.0	3.36	215.55	1,389.5	-137.1	-77.2	-137.0	1.38	-1.31	6.50
1,500.0	2.64	224.00	1,489.4	-141.2	-80.5	-141.0	0.84	-0.72	8.45
1,600.0	2.02	231.64	1,589.3	-143.9	-83.5	-143.7	0.69	-0.62	7.64
1,700.0	1.84	237.06	1,689.2	-145.9	-86.2	-145.7	0.26	-0.18	5.42
1,800.0	1.74	244.01	1,789.2	-147.4	-88.9	-147.2	0.24	-0.10	6.95
1,900.0	1.84	253.24	1,889.1	-148.5	-91.8	-148.4	0.30	0.10	9.23
2,000.0	0.74	241.96	1,989.1	-149.3	-93.9	-149.1	1.12	-1.10	-11.28
2,100.0	0.38	180.71	2,089.1	-149.9	-94.5	-149.8	0.65	-0.36	-61.25
2,200.0	0.27	163.46	2,189.1	-150.5	-94.4	-150.3	0.15	-0.11	-17.25
2,300.0	1.09	128.29	2,289.1	-151.3	-93.6	-151.1	0.88	0.82	-35.17
2,400.0	1.69	110.07	2,389.1	-152.4	-91.5	-152.2	0.74	0.60	-18.22
2,500.0	1.57	96.53	2,489.0	-153.1	-88.8	-152.9	0.40	-0.12	-13.54
2,600.0	1.53	100.04	2,589.0	-153.5	-86.1	-153.3	0.10	-0.04	3.51
2,700.0	1.19	102.69	2,689.0	-153.9	-83.8	-153.8	0.35	-0.34	2.65
2,800.0	0.76	100.62	2,788.9	-154.3	-82.1	-154.1	0.43	-0.43	-2.07
2,900.0	0.88	115.03	2,888.9	-154.7	-80.7	-154.6	0.24	0.12	14.41
3,000.0	1.01	109.24	2,988.9	-155.3	-79.2	-155.2	0.16	0.13	-5.79
3,100.0	0.80	87.84	3,088.9	-155.6	-77.7	-155.4	0.39	-0.21	-21.40
3,200.0	0.50	94.47	3,188.9	-155.6	-76.5	-155.5	0.31	-0.30	6.63
3,300.0	0.60	80.87	3,288.9	-155.6	-75.6	-155.4	0.16	0.10	-13.60
3,400.0	0.59	83.92	3,388.9	-155.4	-74.6	-155.3	0.03	-0.01	3.05
3,500.0	0.26	83.88	3,488.9	-155.3	-73.8	-155.2	0.33	-0.33	-0.04
3,600.0	0.11	93.73	3,588.9	-155.3	-73.5	-155.2	0.15	-0.15	9.85
3,700.0	0.05	159.91	3,688.9	-155.4	-73.4	-155.2	0.10	-0.06	66.18
3,800.0	0.05	148.38	3,788.9	-155.4	-73.4	-155.3	0.01	0.00	-11.53
3,900.0	0.11	134.69	3,888.9	-155.6	-73.3	-155.4	0.06	0.06	-13.69
4,000.0	0.09	109.83	3,988.9	-155.6	-73.1	-155.5	0.05	-0.02	-24.86
4,100.0	0.35	224.22	4,088.9	-155.9	-73.3	-155.8	0.40	0.26	114.39
4,200.0	0.33	221.75	4,188.9	-156.3	-73.7	-156.2	0.02	-0.02	-2.47
4,300.0	0.32	253.50	4,288.9	-156.6	-74.1	-156.5	0.18	-0.01	31.75
4,400.0	0.46	266.72	4,388.9	-156.7	-74.8	-156.6	0.17	0.14	13.22
4,500.0	0.68	249.73	4,488.9	-157.0	-75.8	-156.8	0.28	0.22	-16.99
4,600.0	0.49	252.24	4,588.9	-157.3	-76.7	-157.1	0.19	-0.19	2.51
4,700.0	0.88	238.02	4,688.9	-157.8	-77.8	-157.7	0.42	0.39	-14.22
4,800.0	0.64	238.34	4,788.8	-158.5	-78.9	-158.4	0.24	-0.24	0.32
4,900.0	0.53	200.25	4,888.8	-159.3	-79.5	-159.1	0.40	-0.11	-38.09
5,000.0	0.59	226.08	4,988.8	-160.0	-80.1	-159.9	0.26	0.06	25.83
5,100.0	0.62	225.20	5,088.8	-160.8	-80.8	-160.6	0.03	0.03	-0.88
5,200.0	0.80	232.86	5,188.8	-161.6	-81.8	-161.4	0.20	0.18	7.66



Stryker Directional Survey Report



Company:	Concho Oil and Gas	Local Co-ordinate Reference:	Well Cottonmouth "24" Federal Com #1H
Project:	Eddy County, N.M. Nad (83)	TVD Reference:	GL 2961 + 18 @ 2979.0usft (Sliver Oak #7)
Site:	Section 24-26S-28E Cottonmouth	MD Reference:	GL 2961 + 18 @ 2979.0usft (Sliver Oak #7)
Well:	Cottonmouth "24" Federal Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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)
5,300.0	1.28	240.99	5,288.8	-162.5	-83.3	-162.4	0.50	0.48	8.13
5,400.0	1.20	237.24	5,388.8	-163.7	-85.2	-163.5	0.11	-0.08	-3.75
5,500.0	1.08	232.73	5,488.8	-164.8	-86.8	-164.6	0.15	-0.12	-4.51
5,600.0	0.98	215.90	5,588.7	-166.1	-88.0	-165.9	0.32	-0.10	-16.83
5,700.0	0.91	205.61	5,688.7	-167.5	-88.9	-167.3	0.18	-0.07	-10.29
5,716.0	0.90	208.50	5,704.7	-167.7	-89.0	-167.5	0.29	-0.06	18.06
5,747.0	0.50	15.50	5,735.7	-167.8	-89.1	-167.6	4.49	-1.29	538.71
5,779.0	4.30	39.90	5,767.7	-166.7	-88.3	-166.5	12.03	11.88	76.25
5,810.0	9.10	36.80	5,798.5	-163.9	-86.1	-163.7	15.52	15.48	-10.00
5,842.0	13.80	31.70	5,829.8	-158.6	-82.5	-158.4	15.01	14.69	-15.94
5,873.0	18.80	29.00	5,859.6	-151.1	-78.2	-150.9	16.31	16.13	-8.71
5,904.0	24.20	28.50	5,888.4	-141.1	-72.7	-141.0	17.43	17.42	-1.61
5,936.0	29.10	26.60	5,917.0	-128.4	-66.1	-128.2	15.54	15.31	-5.94
5,967.0	33.80	23.60	5,943.4	-113.7	-59.3	-113.6	15.98	15.16	-9.68
5,999.0	38.50	21.30	5,969.3	-96.3	-52.1	-96.2	15.28	14.69	-7.19
6,030.0	41.30	20.10	5,993.1	-77.7	-45.1	-77.6	9.37	9.03	-3.87
6,062.0	43.80	19.70	6,016.6	-57.3	-37.7	-57.3	7.86	7.81	-1.25
6,094.0	44.80	20.60	6,039.5	-36.4	-30.0	-36.3	3.69	3.13	2.81
6,125.0	46.40	20.40	6,061.2	-15.6	-22.2	-15.6	5.18	5.16	-0.65
6,157.0	48.60	19.50	6,082.8	6.6	-14.2	6.6	7.18	6.88	-2.81
6,188.0	50.90	18.10	6,102.9	29.0	-6.6	29.0	8.18	7.42	-4.52
6,220.0	52.70	16.20	6,122.7	53.0	0.8	53.0	7.31	5.63	-5.94
6,251.0	54.00	13.90	6,141.2	77.0	7.3	77.0	7.28	4.19	-7.42
6,282.0	56.10	12.30	6,158.9	101.8	13.0	101.7	7.99	6.77	-5.16
6,314.0	58.90	12.00	6,176.1	128.1	18.7	128.1	8.79	8.75	-0.94
6,345.0	61.90	11.80	6,191.4	154.5	24.3	154.5	9.69	9.68	-0.65
6,376.0	64.40	11.60	6,205.4	181.6	29.9	181.5	8.09	8.06	-0.65
6,408.0	66.90	10.20	6,218.6	210.2	35.4	210.2	8.77	7.81	-4.38
6,439.0	69.80	10.00	6,230.1	238.6	40.5	238.5	9.37	9.35	-0.65
6,471.0	71.90	8.30	6,240.6	268.4	45.3	268.3	8.26	6.56	-5.31
6,502.0	73.10	5.30	6,249.9	297.8	48.8	297.7	10.01	3.87	-9.68
6,534.0	75.00	3.40	6,258.7	328.5	51.1	328.4	8.24	5.94	-5.94
6,566.0	77.50	2.10	6,266.3	359.5	52.6	359.4	8.75	7.81	-4.06
6,597.0	80.20	1.40	6,272.3	389.9	53.5	389.8	8.99	8.71	-2.26
6,628.0	83.40	0.70	6,276.7	420.6	54.1	420.5	10.56	10.32	-2.26
6,660.0	86.50	359.70	6,279.5	452.4	54.2	452.3	10.18	9.69	-3.13
6,678.6	88.06	358.74	6,280.4	471.0	53.9	470.9	9.85	8.39	-5.16
LP Cottonmouth "24" Federal Com #1H									
6,691.0	89.10	358.10	6,280.7	483.4	53.6	483.3	9.85	8.39	-5.16
6,723.0	89.70	357.20	6,281.0	515.4	52.3	515.3	3.38	1.88	-2.81
6,754.0	90.70	356.70	6,280.9	546.3	50.6	546.2	3.61	3.23	-1.61
6,847.0	90.80	355.60	6,279.7	639.1	44.4	639.0	1.19	0.11	-1.18
6,942.0	90.10	358.10	6,279.0	734.0	39.2	733.9	2.73	-0.74	2.63



Stryker Directional Survey Report



Company:	Concho Oil and Gas	Local Co-ordinate Reference:	Well Cottonmouth "24" Federal Com #1H
Project:	Eddy County, N.M. Nad (83)	TVD Reference:	GL 2961 + 18 @ 2979.0usft (Silver Oak #7)
Site:	Section 24-26S-28E Cottonmouth	MD Reference:	GL 2961 + 18 @ 2979.0usft (Silver Oak #7)
Well:	Cottonmouth "24" Federal Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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)
7,036.0	91.30	357.70	6,277.8	827.9	35.7	827.8	1.35	1.28	-0.43
7,130.0	91.60	359.00	6,275.4	921.8	33.0	921.8	1.42	0.32	1.38
7,225.0	90.60	359.10	6,273.6	1,016.8	31.4	1,016.7	1.06	-1.05	0.11
7,320.0	89.30	359.90	6,273.7	1,111.8	30.6	1,111.7	1.61	-1.37	0.84
7,414.0	90.00	359.30	6,274.3	1,205.8	29.9	1,205.7	0.98	0.74	-0.64
7,508.0	90.80	359.00	6,273.6	1,299.8	28.6	1,299.7	0.91	0.85	-0.32
7,603.0	89.30	0.00	6,273.5	1,394.8	27.7	1,394.7	1.90	-1.58	1.05
7,697.0	90.40	359.90	6,273.8	1,488.8	27.6	1,488.7	1.18	1.17	-0.11
7,792.0	91.30	0.00	6,272.4	1,583.7	27.6	1,583.7	0.95	0.95	0.11
7,886.0	90.70	0.00	6,270.7	1,677.7	27.6	1,677.7	0.64	-0.64	0.00
7,981.0	88.80	359.70	6,271.1	1,772.7	27.3	1,772.7	2.02	-2.00	-0.32
8,075.0	89.00	359.30	6,272.9	1,866.7	26.5	1,866.6	0.48	0.21	-0.43
8,170.0	88.20	358.80	6,275.3	1,961.7	24.9	1,961.6	0.99	-0.84	-0.53
8,265.0	89.70	359.50	6,277.0	2,056.6	23.5	2,056.6	1.74	1.58	0.74
8,359.0	92.20	0.00	6,275.4	2,150.6	23.1	2,150.6	2.71	2.66	0.53
8,454.0	91.50	0.20	6,272.4	2,245.6	23.3	2,245.5	0.77	-0.74	0.21
8,548.0	92.90	0.20	6,268.8	2,339.5	23.6	2,339.4	1.49	1.49	0.00
8,643.0	90.60	0.90	6,265.9	2,434.4	24.5	2,434.4	2.53	-2.42	0.74
8,739.0	89.50	0.70	6,265.8	2,530.4	25.8	2,530.4	1.16	-1.15	-0.21
8,833.0	90.00	0.90	6,266.2	2,624.4	27.2	2,624.3	0.57	0.53	0.21
8,927.0	90.10	0.90	6,266.1	2,718.4	28.6	2,718.3	0.11	0.11	0.00
9,021.0	90.90	0.20	6,265.3	2,812.4	29.5	2,812.3	1.13	0.85	-0.74
9,116.0	89.40	0.20	6,265.0	2,907.4	29.9	2,907.3	1.58	-1.58	0.00
9,211.0	90.00	359.70	6,265.5	3,002.4	29.8	3,002.3	0.82	0.63	-0.53
9,305.0	90.50	359.00	6,265.1	3,096.4	28.7	3,096.3	0.92	0.53	-0.74
9,399.0	90.00	359.50	6,264.7	3,190.4	27.5	3,190.3	0.75	-0.53	0.53
9,490.0	90.10	359.00	6,264.6	3,281.4	26.3	3,281.3	0.56	0.11	-0.55
9,584.0	90.90	359.10	6,263.8	3,375.3	24.7	3,375.3	0.86	0.85	0.11
9,679.0	89.40	359.40	6,263.6	3,470.3	23.5	3,470.3	1.61	-1.58	0.32
9,773.0	89.60	359.30	6,264.4	3,564.3	22.4	3,564.3	0.24	0.21	-0.11
9,868.0	90.20	359.70	6,264.6	3,659.3	21.6	3,659.3	0.76	0.63	0.42
9,963.0	90.80	359.50	6,263.7	3,754.3	20.9	3,754.3	0.67	0.63	-0.21
10,059.0	89.20	359.70	6,263.7	3,850.3	20.3	3,850.3	1.68	-1.67	0.21
10,154.0	90.00	0.00	6,264.4	3,945.3	20.0	3,945.2	0.90	0.84	0.32
10,248.0	90.70	0.20	6,263.8	4,039.3	20.2	4,039.2	0.77	0.74	0.21
10,342.0	91.40	0.20	6,262.1	4,133.3	20.5	4,133.2	0.74	0.74	0.00
10,436.0	89.60	359.90	6,261.3	4,227.3	20.6	4,227.2	1.94	-1.91	-0.32
10,531.0	89.80	359.70	6,261.8	4,322.3	20.3	4,322.2	0.30	0.21	-0.21
10,625.0	90.10	359.30	6,261.9	4,416.3	19.4	4,416.2	0.53	0.32	-0.43
10,720.0	90.70	359.30	6,261.2	4,511.3	18.3	4,511.2	0.63	0.63	0.00
10,814.0	91.30	359.10	6,259.6	4,605.2	17.0	4,605.2	0.67	0.64	-0.21
10,908.0	90.40	359.70	6,258.2	4,699.2	16.0	4,699.2	1.15	-0.96	0.64
10,971.0	90.60	359.50	6,257.6	4,762.2	15.5	4,762.2	0.45	0.32	-0.32
11,029.0	90.60	359.50	6,257.0	4,820.2	15.0	4,820.2	0.00	0.00	0.00



Stryker Directional Survey Report



Company:	Concho Oil and Gas	Local Co-ordinate Reference:	Well Cottonmouth "24" Federal Com #1H
Project:	Eddy County, N.M. Nad (83)	TVD Reference:	GL 2961 + 18 @ 2979.0usft (Sliver Oak #7)
Site:	Section 24-26S-28E Cottonmouth	MD Reference:	GL 2961 + 18 @ 2979.0usft (Sliver Oak #7)
Well:	Cottonmouth "24" Federal Com #1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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)

11029' MD Projected to Bit - PBHL Cottonmouth "24" Federal Com #1H

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,029.0	6,257.0	4,820.2	15.0	11029' MD Projected to Bit