VAUGHN ENERGY SERVICES
A GYRO TECHNOLOGIES INC. COMPANY

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

November 6, 2013

30-015-41532

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

Attn: Kanicia Castillo

RE: **SRO State Unit No. 053H**

Please find enclosed a copy of the survey from 0.00' to 6700.00' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
§
COUNTY OF NUECES §

This instrument was acknowledged before me on the 6 day of November A.D., 2013, by Keith Havelka.

Meredith Darden
Notary Public, State of Texas

MEREDITH DARDEN
Notary Public, State of Texas
My Commission Expires
July 25, 2017

Company: COG Operating, LLC (Concho)
Lease/Well: SRO State Unit/No. 053H

Rig Name: Patterson 79
State/County: New Mexico/Eddy
Latitude: 32.04, Longitude: -104.08
GRID North is 0.13 Degrees East of True North
VS-Azi: 0.00 Degrees

Depth Reference : RKB = 17.5 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS
Filename: ...state unit 53h_gyro survey.ut
Minimum Curvature Method
Report Date/Time: 11/6/2013 / 14:49

Vaughn Energy Services
Midland, Texas
432-563-5444
Surveyor: Gene Heiss
SRO State Unit No. 053H / API 30-015-41532

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	0.51	205.78	100.00	-0.40	-0.19	-0.40	0.44	205.78	0.51
200.00	0.57	232.97	199.99	-1.10	-0.78	-1.10	1.35	215.49	0.26
300.00	0.42	245.56	299.99	-1.55	-1.51	-1.55	2.16	224.31	0.19
400.00	0.62	312.02	399.99	-1.34	-2.25	-1.34	2.61	239.28	0.60
500.00	0.05	303.87	499.99	-0.95	-2.68	-0.95	2.85	250.52	0.58
600.00	0.14	325.86	599.99	-0.83	-2.78	-0.83	2.91	253.45	0.10
700.00	0.20	344.01	699.98	-0.56	-2.90	-0.56	2.95	259.05	0.08
800.00	0.23	29.93	799.98	-0.22	-2.85	-0.22	2.86	265.55	0.17
900.00	0.49	65.60	899.98	0.13	-2.36	0.13	2.37	273.08	0.33
1000.00	0.53	86.02	999.98	0.33	-1.52	0.33	1.55	282.45	0.18
1100.00	0.41	84.36	1099.97	0.40	-0.70	0.40	0.81	299.75	0.12
1200.00	0.49	69.48	1199.97	0.59	0.05	0.59	0.59	4.84	0.14
1300.00	0.51	60.77	1299.97	0.95	0.84	0.95	1.27	41.33	0.08
1400.00	0.53	85.51	1399.96	1.21	1.69	1.21	2.08	54.47	0.22
1500.00	0.41	75.23	1499.96	1.34	2.50	1.34	2.84	61.91	0.14
1600.00	0.17	70.80	1599.96	1.48	2.99	1.48	3.34	63.74	0.24
1700.00	0.27	95.55	1699.96	1.50	3.37	1.50	3.69	65.92	0.13
1800.00	0.36	104.45	1799.96	1.40	3.90	1.40	4.14	70.21	0.11

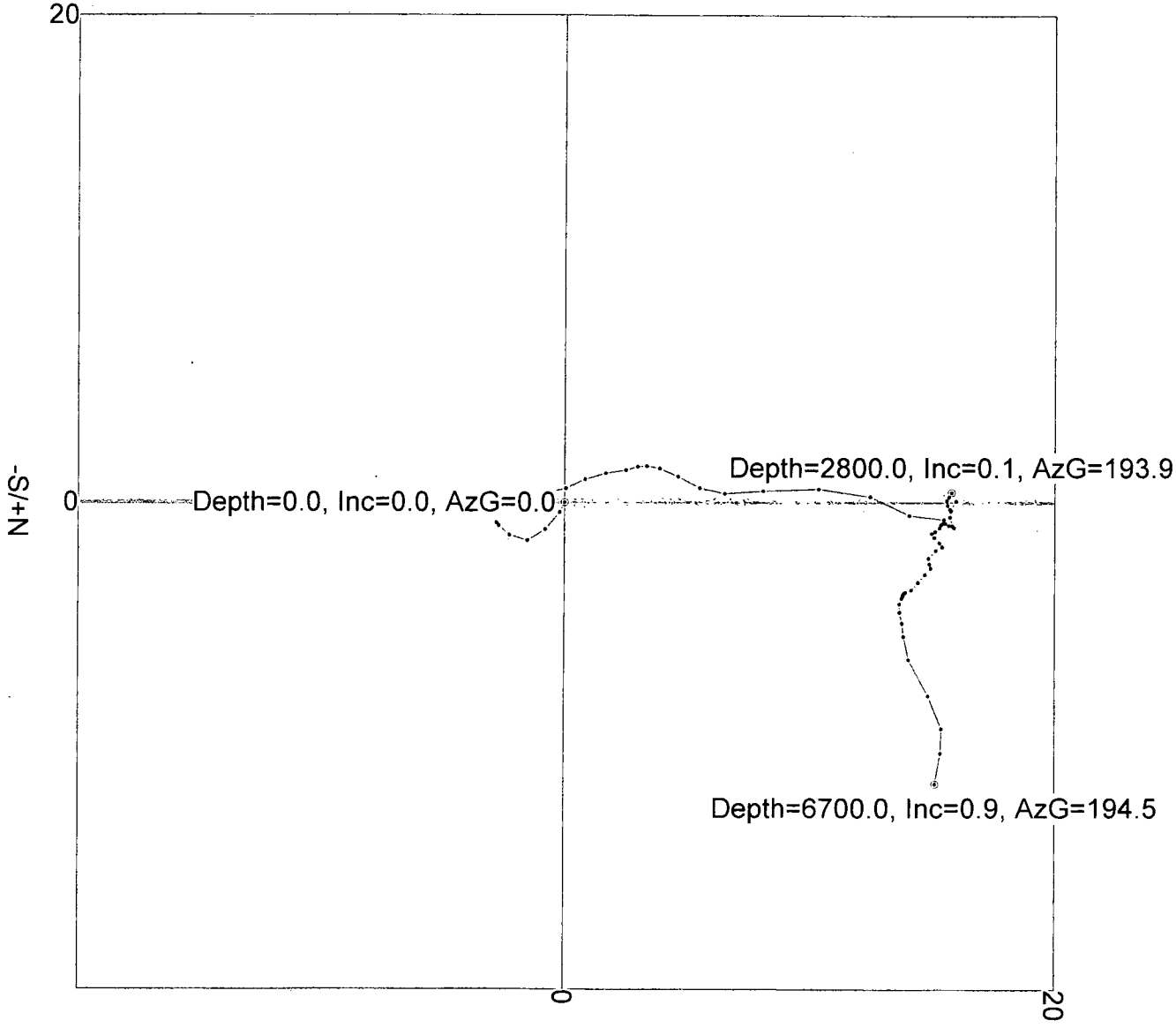
VES Survey Date: 10/26/2013

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	0.59	119.26	1899.95	1.07	4.65	1.07	4.77	76.98	0.26
2000.00	0.58	116.60	1999.95	0.60	5.55	0.60	5.58	83.84	0.03
2100.00	0.64	89.71	2099.94	0.38	6.55	0.38	6.56	86.72	0.29
2200.00	1.17	84.03	2199.93	0.48	8.12	0.48	8.14	86.59	0.54
2300.00	1.46	91.01	2299.90	0.57	10.41	0.57	10.42	86.88	0.33
2400.00	0.99	110.45	2399.88	0.24	12.48	0.24	12.49	88.88	0.62
2500.00	1.04	120.87	2499.87	-0.52	14.07	-0.52	14.08	92.12	0.19
2600.00	0.81	65.65	2599.85	-0.69	15.48	-0.69	15.50	92.57	0.88
2700.00	0.57	342.12	2699.85	0.07	15.97	0.07	15.97	89.75	0.93
2800.00	0.15	193.92	2799.85	0.42	15.79	0.42	15.79	88.48	0.70
2900.00	0.11	228.31	2899.85	0.23	15.68	0.23	15.68	89.16	0.08
3000.00	0.08	198.82	2999.85	0.10	15.59	0.10	15.59	89.64	0.06
3100.00	0.17	156.78	3099.85	-0.11	15.62	-0.11	15.62	90.39	0.13
3200.00	0.06	127.69	3199.85	-0.28	15.72	-0.28	15.73	91.01	0.13
3300.00	0.03	155.71	3299.85	-0.33	15.77	-0.33	15.78	91.20	0.04
3400.00	0.28	193.92	3399.85	-0.59	15.72	-0.59	15.74	92.15	0.26
3500.00	0.22	129.42	3499.85	-0.95	15.82	-0.95	15.84	93.44	0.27
3600.00	0.10	300.83	3599.85	-1.03	15.89	-1.03	15.92	93.70	0.32
3700.00	0.17	287.88	3699.85	-0.94	15.68	-0.94	15.71	93.43	0.07
3800.00	0.06	342.27	3799.85	-0.85	15.53	-0.85	15.55	93.13	0.14
3900.00	0.09	243.29	3899.85	-0.84	15.44	-0.84	15.46	93.10	0.11
4000.00	0.04	200.82	3999.85	-0.91	15.36	-0.91	15.38	93.38	0.07
4100.00	0.12	198.90	4099.85	-1.04	15.31	-1.04	15.34	93.88	0.07
4200.00	0.19	253.26	4199.84	-1.18	15.12	-1.18	15.16	94.48	0.16
4300.00	0.04	159.93	4299.84	-1.27	14.97	-1.27	15.02	94.83	0.20
4400.00	0.18	143.85	4399.84	-1.43	15.08	-1.43	15.15	95.42	0.14
4500.00	0.17	129.75	4499.84	-1.66	15.29	-1.66	15.38	96.18	0.05
4600.00	0.06	179.96	4599.84	-1.81	15.40	-1.81	15.51	96.70	0.14
4700.00	0.33	250.56	4699.84	-1.96	15.13	-1.96	15.26	97.38	0.31
4800.00	0.25	184.74	4799.84	-2.28	14.85	-2.28	15.02	98.72	0.32
4900.00	0.07	109.63	4899.84	-2.52	14.88	-2.52	15.09	99.60	0.24
5000.00	0.17	179.68	4999.84	-2.68	14.94	-2.68	15.18	100.18	0.16
5100.00	0.30	243.46	5099.84	-2.95	14.70	-2.95	15.00	101.33	0.27
5200.00	0.25	192.26	5199.84	-3.27	14.42	-3.27	14.79	102.79	0.24
5300.00	0.27	245.88	5299.84	-3.58	14.16	-3.58	14.61	104.19	0.23
5400.00	0.05	269.17	5399.84	-3.68	13.90	-3.68	14.38	104.82	0.22
5500.00	0.06	202.32	5499.84	-3.72	13.84	-3.72	14.33	105.05	0.06
5600.00	0.02	229.86	5599.84	-3.78	13.81	-3.78	14.32	105.31	0.04
5700.00	0.03	144.41	5699.84	-3.81	13.81	-3.81	14.33	105.43	0.04

VES Survey Date: 10/26/2013

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	0.12	218.18	5799.84	-3.92	13.76	-3.92	14.31	105.88	0.11
5900.00	0.18	188.14	5899.84	-4.15	13.67	-4.15	14.29	106.89	0.10
6000.00	0.22	171.32	5999.84	-4.50	13.68	-4.50	14.40	108.20	0.07
6100.00	0.30	164.29	6099.84	-4.95	13.78	-4.95	14.64	109.74	0.09
6200.00	0.33	181.84	6199.83	-5.49	13.84	-5.49	14.89	111.62	0.10
6300.00	0.81	162.01	6299.83	-6.44	14.05	-6.44	15.46	114.64	0.51
6400.00	1.14	144.67	6399.82	-7.92	14.84	-7.92	16.83	118.09	0.44
6500.00	0.61	181.43	6499.80	-9.26	15.40	-9.26	17.97	121.02	0.74
6600.00	0.55	183.27	6599.80	-10.27	15.36	-10.27	18.48	123.77	0.07
6700.00	0.93	194.47	6699.79	-11.54	15.13	-11.54	19.03	127.32	0.41

Vaughn Energy Services
Midland, Texas
432-563-5444
Surveyor: Gene Heiss
SRO State Unit No. 053H / API 30-015-41532



VES Survey Date: 10/26/2013

CONCHO

COG Operating, LLC

Eddy County, NM (NAD 27)
Sec 16, T26-S, R28-E
SRO State Unit #53H

Wellbore #1

Survey: MWD

DDC Survey Report

30 October, 2013

DDC
The DIRECTIONAL DRILLING COMPANY

The DIRECTIONAL DRILLING COMPANY

Survey Certification Sheet

COG Operating	WT-13812	11/5/13
Company	Job Number	Date

Sec16, T26S, R28E	SRO State Unit #53H	Eddy, NM
Lease	Well Name	County & State

API: 30-015-41532

Surveyed from a depth of: 6700 feet to10376 feet MD

Type of Survey: MWD

Directional Supervisor/Surveyor: George Sample

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by **The Directional Drilling Company (DDC)**. This report represents a true and correct Directional survey of this well based on the original data obtained at the well site. Wellbore Coordinates are calculated using minimum curvature.

Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The Directional Drilling Company, ou=GM of Guidance Services, email=larryw@directionaldrillers.com, c=US
Date: 2013.11.08 11:52:19 -06'00'

Larry Wright
MWD General Manager

• 11390 FM 830 • Willis, Texas 77318 •
• PH 936-856-4332 • FAX 936-856-8678 •

Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well SRO State Unit #53H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	WELL @ 3056.0usft (Patterson 79)
Site:	Sec 16, T26-S, R28-E	**MD Reference:**	WELL @ 3056.0usft (Patterson 79)
Well:	SRO State Unit #53H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

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 16, T26-S, R28-E

Site Position:		**Northing:**	381,711.00 usft	**Latitude:**	32° 2' 57.104 N
From:	Map	**Easting:**	576,870.10 usft	**Longitude:**	104° 5' 6.824 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.13 °

Well SRO State Unit #53H

Well Position	**+N/-S**	0.0 usft	**Northing:**	381,711.00 usft	**Latitude:**	32° 2' 57.104 N
	+E/-W	0.0 usft	**Easting:**	576,870.10 usft	**Longitude:**	104° 5' 6.824 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,038.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/8/2013	7.56	59.89	48,251

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	177.95

Survey Program Date 10/30/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	6,700.0	GYRO (Wellbore #1)	Good_gyro	Good Gyro
6,752.0	10,376.0	MWD (Wellbore #1)	MWD default	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)
TIE IN @ 6700' MD / 6699.8' TVD									
6,700.0	0.93	194.47	6,699.8	-11.5	15.2	12.1	0.00	0.00	0.00
6,752.0	1.20	204.40	6,751.8	-12.4	14.8	13.0	0.63	0.52	19.10
6,846.0	1.70	211.60	6,845.8	-14.5	13.7	15.0	0.57	0.53	7.66
6,941.0	1.90	235.60	6,940.7	-16.6	11.7	17.0	0.81	0.21	25.26
7,035.0	0.90	264.20	7,034.7	-17.6	9.6	17.9	1.27	-1.06	30.43
7,130.0	0.90	238.40	7,129.7	-18.0	8.3	18.3	0.42	0.00	-27.16
7,225.0	1.10	216.90	7,224.7	-19.2	7.1	19.4	0.44	0.21	-22.63
7,319.0	1.50	221.30	7,318.6	-20.8	5.7	21.0	0.44	0.43	4.68
7,414.0	1.40	210.40	7,413.6	-22.7	4.3	22.9	0.31	-0.11	-11.47

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well SRO State Unit #53H
Project:	Eddy County, NM (NAD 27)	TVD Reference:	WELL @ 3056.0usft (Patterson 79)
Site:	Sec 16, T26-S, R28-E	MD Reference:	WELL @ 3056.0usft (Patterson 79)
Well:	SRO State Unit #53H	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)
7,496.0	0.60	151.90	7,495.6	-24.0	4.0	24.1	1.46	-0.98	-71.34
7,508.0	0.70	124.80	7,507.6	-24.1	4.1	24.2	2.66	0.83	-225.83
7,540.0	1.30	114.30	7,539.6	-24.3	4.6	24.5	1.95	1.88	-32.81
7,572.0	3.30	165.20	7,571.6	-25.4	5.2	25.5	8.37	6.25	159.06
7,603.0	6.30	182.30	7,602.4	-27.9	5.3	28.1	10.62	9.68	55.16
7,635.0	9.40	188.30	7,634.1	-32.3	4.9	32.4	10.01	9.69	18.75
7,666.0	12.90	186.30	7,664.6	-38.2	4.1	38.3	11.36	11.29	-6.45
7,698.0	16.30	182.80	7,695.5	-46.3	3.5	46.4	10.97	10.63	-10.94
7,729.0	19.90	179.80	7,725.0	-55.9	3.3	56.0	11.99	11.61	-9.68
7,760.0	23.40	178.40	7,753.8	-67.3	3.5	67.4	11.41	11.29	-4.52
7,792.0	26.80	178.30	7,782.8	-80.9	3.9	81.0	10.63	10.63	-0.31
7,823.0	30.40	178.40	7,810.0	-95.7	4.3	95.8	11.61	11.61	0.32
7,855.0	33.10	178.60	7,837.2	-112.5	4.8	112.6	8.44	8.44	0.63
7,887.0	35.60	178.40	7,863.6	-130.6	5.2	130.7	7.82	7.81	-0.63
7,918.0	37.60	177.90	7,888.5	-149.1	5.8	149.2	6.52	6.45	-1.61
7,949.0	40.50	177.40	7,912.6	-168.6	6.6	168.7	9.41	9.35	-1.61
7,981.0	43.60	176.80	7,936.3	-190.0	7.7	190.1	9.77	9.69	-1.88
8,013.0	45.60	176.10	7,959.1	-212.4	9.1	212.6	6.44	6.25	-2.19
8,044.0	48.20	176.10	7,980.3	-235.0	10.7	235.2	8.39	8.39	0.00
8,076.0	51.40	175.80	8,000.9	-259.4	12.4	259.6	10.03	10.00	-0.94
8,108.0	54.70	177.20	8,020.2	-284.9	13.9	285.2	10.89	10.31	4.38
8,139.0	57.60	177.90	8,037.4	-310.6	15.0	310.9	9.54	9.35	2.26
8,171.0	61.60	178.90	8,053.6	-338.2	15.8	338.5	12.79	12.50	3.13
8,192.0	63.60	178.80	8,063.3	-356.8	16.2	357.2	9.53	9.52	-0.48
8,224.0	66.30	179.10	8,076.8	-385.8	16.7	386.2	8.48	8.44	0.94
8,256.0	68.90	178.80	8,089.0	-415.4	17.3	415.7	8.17	8.13	-0.94
8,288.0	69.60	179.10	8,100.4	-445.3	17.8	445.7	2.36	2.19	0.94
8,319.0	70.30	179.50	8,111.0	-474.4	18.2	474.8	2.56	2.26	1.29
8,351.0	72.50	178.90	8,121.2	-504.8	18.6	505.1	7.10	6.88	-1.88
8,382.0	74.70	179.30	8,129.9	-534.5	19.1	534.8	7.20	7.10	1.29
8,414.0	77.30	179.10	8,137.7	-565.5	19.5	565.9	8.15	8.13	-0.63
8,446.0	79.80	179.50	8,144.0	-596.9	19.9	597.2	7.91	7.81	1.25
8,477.0	82.70	179.50	8,148.8	-627.5	20.1	627.8	9.35	9.35	0.00
8,509.0	85.40	179.70	8,152.1	-659.3	20.4	659.7	8.46	8.44	0.63
8,541.0	87.90	179.80	8,153.9	-691.3	20.5	691.6	7.82	7.81	0.31
8,573.0	88.90	180.00	8,154.8	-723.3	20.6	723.5	3.19	3.13	0.63
8,604.0	89.30	179.70	8,155.3	-754.3	20.6	754.5	1.61	1.29	-0.97
8,667.0	91.70	179.50	8,154.8	-817.3	21.1	817.5	3.82	3.81	-0.32
8,699.0	91.90	178.80	8,153.8	-849.2	21.6	849.5	2.27	0.63	-2.19
8,761.0	91.60	179.50	8,151.9	-911.2	22.5	911.4	1.23	-0.48	1.13
8,855.0	92.80	177.40	8,148.3	-1,005.1	25.0	1,005.3	2.57	1.28	-2.23
8,951.0	92.30	177.20	8,144.0	-1,100.9	29.5	1,101.2	0.56	-0.52	-0.21
9,046.0	91.70	177.40	8,140.7	-1,195.7	34.0	1,196.2	0.67	-0.63	0.21

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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)
9,141.0	90.60	177.00	8,138.8	-1,290.6	38.6	1,291.2	1.23	-1.16	-0.42
9,235.0	91.30	176.80	8,137.2	-1,384.4	43.7	1,385.1	0.77	0.74	-0.21
9,330.0	90.80	176.10	8,135.5	-1,479.2	49.6	1,480.1	0.91	-0.53	-0.74
9,425.0	89.30	177.60	8,135.4	-1,574.1	54.8	1,575.1	2.23	-1.58	1.58
9,521.0	90.00	176.80	8,136.0	-1,670.0	59.5	1,671.0	1.11	0.73	-0.83
9,616.0	90.20	177.20	8,135.8	-1,764.8	64.5	1,766.0	0.47	0.21	0.42
9,711.0	91.00	177.00	8,134.8	-1,859.7	69.3	1,861.0	0.87	0.84	-0.21
9,807.0	90.20	176.80	8,133.8	-1,955.6	74.5	1,957.0	0.86	-0.83	-0.21
9,901.0	88.90	177.60	8,134.5	-2,049.5	79.1	2,051.0	1.62	-1.38	0.85
9,997.0	88.60	178.30	8,136.6	-2,145.4	82.5	2,146.9	0.79	-0.31	0.73
10,092.0	88.80	178.60	8,138.8	-2,240.3	85.1	2,241.9	0.38	0.21	0.32
10,186.0	89.70	178.30	8,140.0	-2,334.3	87.6	2,335.9	1.01	0.96	-0.32
10,281.0	90.90	178.60	8,139.5	-2,429.2	90.2	2,430.9	1.30	1.26	0.32
TD @ 10376' MD / 8138.6' TVD									
10,376.0	90.20	177.70	8,138.6	-2,524.2	93.3	2,525.9	1.20	-0.74	-0.95

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,700.0	6,699.8	-11.5	15.2	TIE IN @ 6700' MD / 6699.8' TVD
10,376.0	8,138.6	-2,524.2	93.3	TD @ 10376' MD / 8138.6' TVD

Checked By: _____ Approved By: _____ Date: _____

CONCHO

COG Operating, LLC

Eddy County, NM (NAD 27)
Sec 16, T26-S, R28-E
SRO State Unit #53H

Wellbore #1

Survey: MWD

DDC Survey Report

06 November, 2013

CONCHO

DDC
Survey Report

Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well SRO State Unit #53H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	WELL @ 3056.0usft (Patterson 79)
Site:	Sec 16, T26-S, R28-E	**MD Reference:**	WELL @ 3056.0usft (Patterson 79)
Well:	SRO State Unit #53H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

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 16, T26-S, R28-E

Site Position:		**Northing:**	381,711.00 usft	**Latitude:**	32° 2' 57.104 N
From:	Map	**Easting:**	576,870.10 usft	**Longitude:**	104° 5' 6.824 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.13 °

Well SRO State Unit #53H

Well Position	**+N/-S**	0.0 usft	**Northing:**	381,711.00 usft	**Latitude:**	32° 2' 57.104 N
	+E/-W	0.0 usft	**Easting:**	576,870.10 usft	**Longitude:**	104° 5' 6.824 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,038.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/8/2013	7.56	59.89	48,251

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	177.95

Survey Program **Date** 11/6/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	6,700.0	GYRO (Wellbore #1)	Good_gyro	Good Gyro
6,752.0	12,667.0	MWD (Wellbore #1)	MWD default	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)
TIE IN @ 6300' MD / 6299.8' TVD									
6,300.0	0.81	162.01	6,299.8	-6.4	14.1	6.9	0.00	0.00	0.00
6,468.0	0.80	165.20	6,467.8	-8.7	14.8	9.2	0.03	-0.01	1.90
6,563.0	0.70	179.80	6,562.8	-9.9	14.9	10.4	0.23	-0.11	15.37
6,657.0	0.70	198.60	6,656.8	-11.0	14.7	11.6	0.24	0.00	20.00
6,752.0	1.20	204.40	6,751.8	-12.5	14.1	13.0	0.54	0.53	6.11
6,846.0	1.70	211.60	6,845.8	-14.6	13.0	15.0	0.57	0.53	7.66
6,941.0	1.90	235.60	6,940.7	-16.7	11.0	17.0	0.81	0.21	25.26
7,035.0	0.90	264.20	7,034.7	-17.6	8.9	17.9	1.27	-1.06	30.43
7,130.0	0.90	238.40	7,129.7	-18.1	7.6	18.3	0.42	0.00	-27.16

Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well SRO State Unit #53H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	WELL @ 3056.0usft (Patterson 79)
Site:	Sec 16, T26-S, R28-E	**MD Reference:**	WELL @ 3056.0usft (Patterson 79)
Well:	SRO State Unit #53H	**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)
7,225.0	1.10	216.90	7,224.7	-19.2	6.4	19.4	0.44	0.21	-22.63
7,319.0	1.50	221.30	7,318.6	-20.8	5.0	21.0	0.44	0.43	4.68
7,414.0	1.40	210.40	7,413.6	-22.8	3.6	22.9	0.31	-0.11	-11.47
7,496.0	0.60	151.90	7,495.6	-24.0	3.3	24.1	1.46	-0.98	-71.34
7,508.0	0.70	124.80	7,507.6	-24.1	3.4	24.2	2.66	0.83	-225.83
7,540.0	1.30	114.30	7,539.6	-24.4	3.9	24.5	1.95	1.88	-32.81
7,572.0	3.30	165.20	7,571.6	-25.4	4.5	25.6	8.37	6.25	159.06
7,603.0	6.30	182.30	7,602.4	-28.0	4.6	28.1	10.62	9.68	55.16
7,635.0	9.40	188.30	7,634.1	-32.3	4.2	32.5	10.01	9.69	18.75
7,666.0	12.90	186.30	7,664.6	-38.3	3.4	38.4	11.36	11.29	-6.45
7,698.0	16.30	182.80	7,695.5	-46.3	2.8	46.4	10.97	10.63	-10.94
7,729.0	19.90	179.80	7,725.0	-55.9	2.6	56.0	11.99	11.61	-9.68
7,760.0	23.40	178.40	7,753.8	-67.4	2.8	67.4	11.41	11.29	-4.52
7,792.0	26.80	178.30	7,782.8	-80.9	3.2	81.0	10.63	10.63	-0.31
7,823.0	30.40	178.40	7,810.0	-95.8	3.6	95.8	11.61	11.61	0.32
7,855.0	33.10	178.60	7,837.2	-112.6	4.1	112.7	8.44	8.44	0.63
7,887.0	35.60	178.40	7,863.6	-130.6	4.6	130.7	7.82	7.81	-0.63
CROSSED HARDLINE @ 7902.8' MD / 7876.4' TVD									
7,902.8	36.62	178.14	7,876.4	-140.0	4.8	140.0	6.52	6.45	-1.65
7,918.0	37.60	177.90	7,888.5	-149.1	5.2	149.2	6.52	6.45	-1.57
7,949.0	40.50	177.40	7,912.6	-168.6	6.0	168.7	9.41	9.35	-1.61
7,981.0	43.60	176.80	7,936.3	-190.0	7.0	190.2	9.77	9.69	-1.88
8,013.0	45.60	176.10	7,959.1	-212.5	8.4	212.6	6.44	6.25	-2.19
8,044.0	48.20	176.10	7,980.3	-235.0	10.0	235.2	8.39	8.39	0.00
8,076.0	51.40	175.80	8,000.9	-259.4	11.7	259.7	10.03	10.00	-0.94
8,108.0	54.70	177.20	8,020.2	-284.9	13.3	285.2	10.89	10.31	4.38
8,139.0	57.60	177.90	8,037.4	-310.7	14.4	311.0	9.54	9.35	2.26
8,171.0	61.60	178.90	8,053.6	-338.2	15.1	338.6	12.79	12.50	3.13
8,192.0	63.60	178.80	8,063.3	-356.9	15.5	357.2	9.53	9.52	-0.48
8,224.0	66.30	179.10	8,076.8	-385.9	16.0	386.2	8.48	8.44	0.94
8,256.0	68.90	178.80	8,089.0	-415.4	16.6	415.8	8.17	8.13	-0.94
8,288.0	69.60	179.10	8,100.4	-445.4	17.1	445.7	2.36	2.19	0.94
8,319.0	70.30	179.50	8,111.0	-474.5	17.5	474.8	2.56	2.26	1.29
8,351.0	72.50	178.90	8,121.2	-504.8	17.9	505.1	7.10	6.88	-1.88
8,382.0	74.70	179.30	8,130.0	-534.5	18.4	534.8	7.20	7.10	1.29
8,414.0	77.30	179.10	8,137.7	-565.6	18.8	565.9	8.15	8.13	-0.63
8,446.0	79.80	179.50	8,144.0	-596.9	19.2	597.2	7.91	7.81	1.25
8,477.0	82.70	179.50	8,148.8	-627.6	19.4	627.9	9.35	9.35	0.00
8,509.0	85.40	179.70	8,152.1	-659.4	19.7	659.7	8.46	8.44	0.63
8,541.0	87.90	179.80	8,153.9	-691.3	19.8	691.6	7.82	7.81	0.31
8,573.0	88.90	180.00	8,154.8	-723.3	19.9	723.6	3.19	3.13	0.63
8,604.0	89.30	179.70	8,155.3	-754.3	19.9	754.6	1.61	1.29	-0.97
8,667.0	91.70	179.50	8,154.8	-817.3	20.4	817.5	3.82	3.81	-0.32

Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well SRO State Unit #53H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	WELL @ 3056.0usft (Patterson 79)
Site:	Sec 16, T26-S, R28-E	**MD Reference:**	WELL @ 3056.0usft (Patterson 79)
Well:	SRO State Unit #53H	**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)
8,699.0	91.90	178.80	8,153.8	-849.3	20.9	849.5	2.27	0.63	-2.19
8,761.0	91.60	179.50	8,151.9	-911.3	21.8	911.5	1.23	-0.48	1.13
8,855.0	92.80	177.40	8,148.3	-1,005.1	24.3	1,005.4	2.57	1.28	-2.23
8,951.0	92.30	177.20	8,144.0	-1,100.9	28.8	1,101.3	0.56	-0.52	-0.21
9,046.0	91.70	177.40	8,140.7	-1,195.8	33.3	1,196.2	0.67	-0.63	0.21
9,141.0	90.60	177.00	8,138.8	-1,290.6	37.9	1,291.2	1.23	-1.16	-0.42
9,235.0	91.30	176.80	8,137.2	-1,384.5	43.0	1,385.1	0.77	0.74	-0.21
9,330.0	90.80	176.10	8,135.5	-1,479.3	48.9	1,480.1	0.91	-0.53	-0.74
9,425.0	89.30	177.60	8,135.4	-1,574.1	54.1	1,575.1	2.23	-1.58	1.58
9,521.0	90.00	176.80	8,136.0	-1,670.0	58.8	1,671.1	1.11	0.73	-0.83
9,616.0	90.20	177.20	8,135.8	-1,764.9	63.8	1,766.1	0.47	0.21	0.42
9,711.0	91.00	177.00	8,134.8	-1,859.8	68.6	1,861.0	0.87	0.84	-0.21
9,807.0	90.20	176.80	8,133.8	-1,955.6	73.8	1,957.0	0.86	-0.83	-0.21
9,901.0	88.90	177.60	8,134.6	-2,049.5	78.4	2,051.0	1.62	-1.38	0.85
9,997.0	88.60	178.30	8,136.6	-2,145.4	81.8	2,147.0	0.79	-0.31	0.73
10,092.0	88.80	178.60	8,138.8	-2,240.4	84.4	2,241.9	0.38	0.21	0.32
10,186.0	89.70	178.30	8,140.0	-2,334.3	86.9	2,335.9	1.01	0.96	-0.32
10,281.0	90.90	178.60	8,139.5	-2,429.3	89.5	2,430.9	1.30	1.26	0.32
10,376.0	90.20	177.70	8,138.6	-2,524.2	92.6	2,525.9	1.20	-0.74	-0.95
10,471.0	90.60	177.60	8,138.0	-2,619.1	96.5	2,620.9	0.43	0.42	-0.11
10,566.0	90.80	176.70	8,136.8	-2,714.0	101.2	2,715.9	0.97	0.21	-0.95
10,661.0	91.20	177.20	8,135.1	-2,808.9	106.2	2,810.9	0.67	0.42	0.53
10,756.0	90.30	177.40	8,133.9	-2,903.8	110.7	2,905.9	0.97	-0.95	0.21
10,852.0	91.40	176.30	8,132.5	-2,999.6	116.0	3,001.8	1.62	1.15	-1.15
10,947.0	90.60	176.80	8,130.8	-3,094.4	121.7	3,096.8	0.99	-0.84	0.53
11,042.0	89.10	178.10	8,131.1	-3,189.3	125.9	3,191.8	2.09	-1.58	1.37
11,138.0	90.00	177.70	8,131.8	-3,285.2	129.4	3,287.8	1.03	0.94	-0.42
11,234.0	90.00	177.40	8,131.8	-3,381.2	133.5	3,383.8	0.31	0.00	-0.31
11,329.0	89.40	178.10	8,132.3	-3,476.1	137.3	3,478.8	0.97	-0.63	0.74
11,426.0	90.00	177.20	8,132.8	-3,573.0	141.3	3,575.8	1.12	0.62	-0.93
11,522.0	90.00	176.70	8,132.8	-3,668.9	146.4	3,671.7	0.52	0.00	-0.52
11,617.0	90.70	177.90	8,132.2	-3,763.7	150.8	3,766.7	1.46	0.74	1.26
11,712.0	89.80	178.10	8,131.8	-3,858.7	154.2	3,861.7	0.97	-0.95	0.21
11,809.0	88.80	176.00	8,133.0	-3,955.5	159.1	3,958.7	2.40	-1.03	-2.16
11,904.0	88.70	176.30	8,135.1	-4,050.3	165.5	4,053.6	0.33	-0.11	0.32
12,000.0	88.20	177.40	8,137.7	-4,146.1	170.8	4,149.6	1.26	-0.52	1.15
12,095.0	89.20	176.80	8,139.8	-4,241.0	175.6	4,244.5	1.23	1.05	-0.63
12,190.0	89.50	177.00	8,140.9	-4,335.8	180.7	4,339.5	0.38	0.32	0.21
12,285.0	89.90	176.80	8,141.4	-4,430.7	185.9	4,434.5	0.47	0.42	-0.21
12,381.0	89.70	176.10	8,141.7	-4,526.5	191.8	4,530.5	0.76	-0.21	-0.73
12,477.0	89.90	176.10	8,142.1	-4,622.3	198.3	4,626.4	0.21	0.21	0.00
12,571.0	89.90	175.10	8,142.2	-4,716.0	205.6	4,720.3	1.06	0.00	-1.06
12,617.0	89.90	174.70	8,142.3	-4,761.8	209.6	4,766.3	0.87	0.00	-0.87

TD @ 12667' MD / 8142.4' TVD

CONCHO

DDC
Survey Report

Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well SRO State Unit #53H
Project:	Eddy County, NM (NAD 27)	**TVD Reference:**	WELL @ 3056.0usft (Patterson 79)
Site:	Sec 16, T26-S, R28-E	**MD Reference:**	WELL @ 3056.0usft (Patterson 79)
Well:	SRO State Unit #53H	**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)
12,667.0	89.90	174.70	8,142.4	-4,811.6	214.3	4,816.2	0.00	0.00	0.00

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,300.0	6,299.8	-6.4	14.1	TIE IN @ 6300' MD / 6299.8' TVD
7,902.8	7,876.4	-140.0	4.8	CROSSED HARDLINE @ 7902.8' MD / 7876.4' TVD
12,667.0	8,142.4	-4,811.6	214.3	TD @ 12667' MD / 8142.4' TVD

Checked By: _____ Approved By: _____ Date: _____

Company Name: COG Operating, LLC
SRO State Unit #53H
Eddy County, NM (NAD 27)
Rig: Patterson 79
Created By: TIFFANI MIZELL
Date: 11/06/2013

SRO State Unit #53H
Eddy County, NM (NAD 27)
Q130588 & WT-13812
Design #3

CONCHO

QDC
The DIRECTIONAL DRILLING COMPANY

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
7902.8	36.62	178.14	7876.4	-139.9	5.5	140.0	175.7	CROSSED HARDLINE @ 7902.8' MD / 7876.4' TVD
12667.0	89.90	174.70	8142.4	-4811.6	215.0	4816.2	4852.7	TD @ 12667' MD / 8142.4' TVD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL - SRO State Unit #53H D#2 - plan hits target center	8143.0	-4813.7	172.4	376897.30	677042.50	32° 2' 9.461 N	104° 5' 4.949 W

T G M

Azimuths to Grid North

Correction: 7.42°

Magnetic Field
Strength: 48250.9snT
Dip Angle: 59.89°
Date: 7/8/2013
Model: IGRF2010

PROJECT DETAILS: Eddy County, NM (NAD 27)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

System Datum: Mean Sea Level

WELL DETAILS: SRO State Unit #53H

Ground Level: 3038.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	381711.00	676870.10	32° 2' 57.104 N	104° 5' 6.824 W