



January 19, 2015

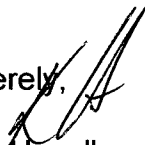
30-015-39717

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

Attn: Kanicia Castillo

RE: **Sherman 4 Fee 3H**

Please find enclosed a copy of the survey from 0' to 2442' ran on the above referenced well.

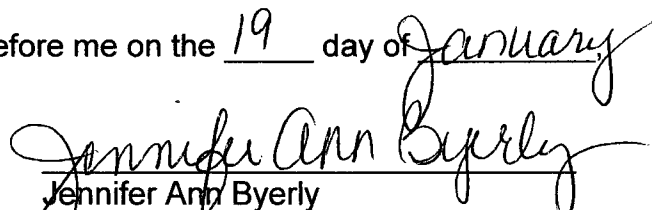
Sincerely,

Keith Havelka
Operations

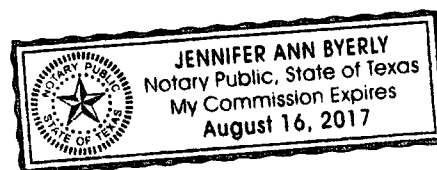
STATE OF TEXAS §
 §
COUNTY OF NUECES §

NM OIL CONSERVATION
ARTESIA DISTRICT
MAR 30 2015

RECEIVED

This instrument was acknowledged before me on the 19 day of January
A.D., 2015, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG Operating

Lease/Well: Sherman 4 Fee/3H

Location: S4 T19S R26E

Rig Name: Silveroak 3

State/County: New Mexico/Eddy

Latitude: 32.68, Longitude: -104.39

GRID North is 0.03 Degrees West of True North

VS-Azi: 359.90 Degrees



Depth Reference : RKB = 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 1/19/2015 / 13:00

VES Survey International

Midland, TX

432-563-5444

Surveyor: Andrew Askew

Sherman 4 Fee 3H / API 30-015-39717

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 30 2015

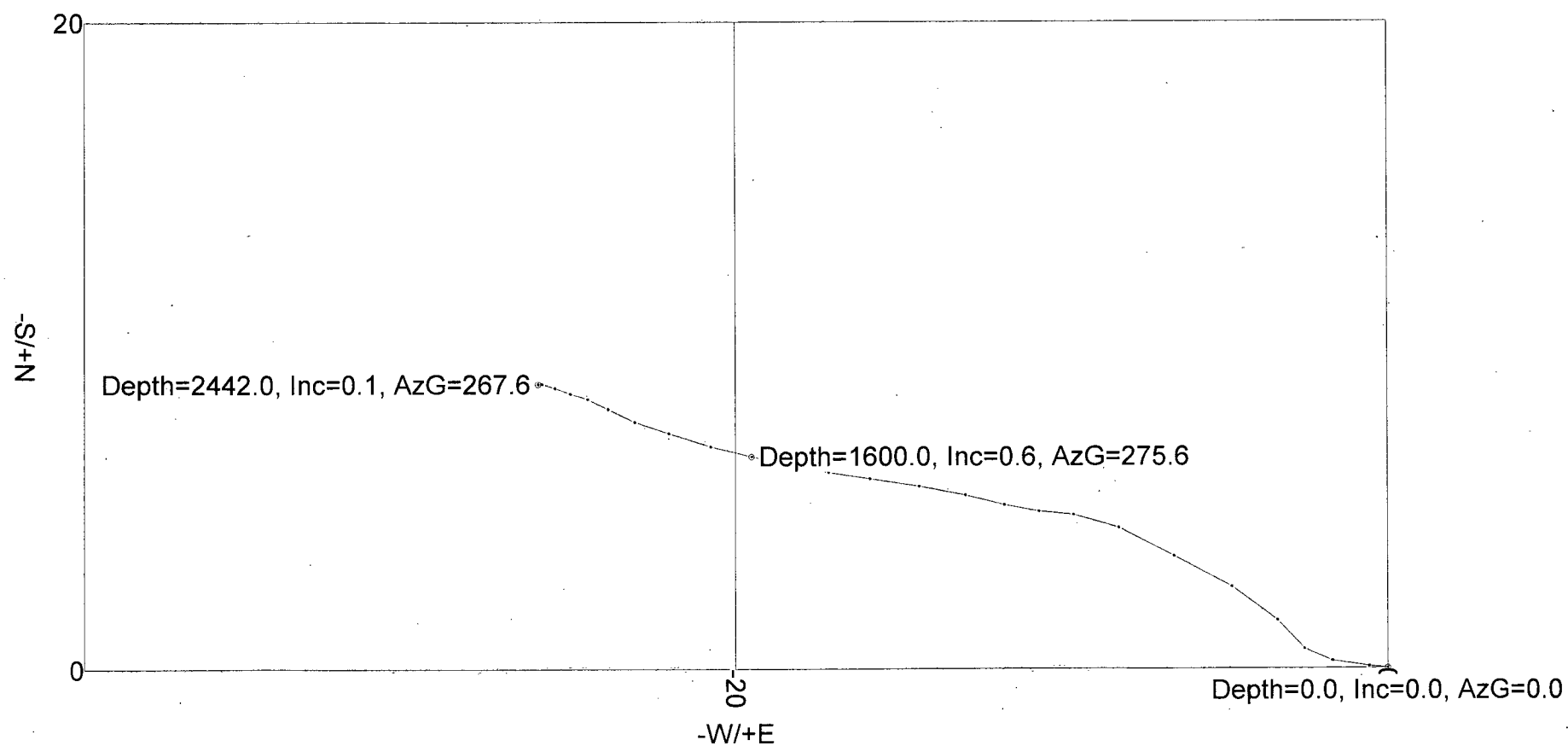
RECEIVED

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	0.68	275.35	100.00	0.06	-0.59	0.06	0.59	275.35	0.68
200.00	0.63	281.78	199.99	0.22	-1.72	0.23	1.74	277.39	0.09
300.00	0.47	310.08	299.99	0.60	-2.58	0.61	2.65	283.15	0.31
400.00	0.92	320.72	399.98	1.49	-3.41	1.50	3.72	293.67	0.47
500.00	1.13	294.91	499.96	2.53	-4.81	2.54	5.43	297.77	0.50
600.00	1.17	301.98	599.94	3.49	-6.57	3.50	7.44	297.97	0.15
700.00	1.02	292.42	699.93	4.37	-8.26	4.38	9.34	297.88	0.24
800.00	0.64	276.75	799.91	4.77	-9.63	4.79	10.75	296.36	0.44
900.00	0.58	274.37	899.91	4.88	-10.69	4.90	11.75	294.52	0.07
1000.00	0.68	285.63	999.90	5.07	-11.76	5.10	12.81	293.34	0.16
1100.00	0.74	282.56	1099.90	5.37	-12.96	5.40	14.03	292.52	0.07
1200.00	0.92	279.36	1199.88	5.65	-14.38	5.67	15.45	291.43	0.18
1300.00	0.83	278.26	1299.87	5.88	-15.89	5.91	16.95	290.30	0.09
1400.00	0.63	279.22	1399.86	6.07	-17.16	6.10	18.20	289.49	0.20
1500.00	0.76	285.21	1499.86	6.33	-18.34	6.37	19.41	289.05	0.14
1600.00	0.60	275.62	1599.85	6.56	-19.50	6.59	20.58	288.59	0.19
1700.00	0.89	289.49	1699.84	6.87	-20.76	6.91	21.87	288.31	0.34
1800.00	0.65	285.64	1799.83	7.29	-22.05	7.32	23.22	288.29	0.25

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	0.62	291.69	1899.83	7.64	-23.09	7.68	24.32	288.30	0.07
2000.00	0.44	302.01	1999.82	8.04	-23.92	8.08	25.23	288.58	0.20
2100.00	0.36	289.84	2099.82	8.35	-24.54	8.39	25.92	288.79	0.12
2200.00	0.29	283.76	2199.82	8.51	-25.08	8.56	26.48	288.75	0.08
2300.00	0.29	297.33	2299.82	8.69	-25.55	8.73	26.99	288.79	0.07
2400.00	0.19	272.52	2399.82	8.81	-25.94	8.86	27.40	288.77	0.14
2442.00	0.13	267.64	2441.82	8.81	-26.06	8.86	27.51	288.69	0.14



VES Survey International
Midland, TX
432-563-5444
Surveyor: Andrew Askew
Sherman 4 Fee 3H / API 30-015-39717





NM OIL CONSERVATION

ARTESIA DISTRICT

MAR 30 2015

RECEIVED

COG Operating LLC

Eddy County, NM (NAD27 NME)

Sherman 4 Fee

#3H

WB1 / Job #1512624

Design: Surveys (Silver Oak 3)

Standard Survey Report

14 January, 2015



PHOENIX
TECHNOLOGY SERVICES



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3365.00usft (Silver Oak 3)
Site:	Sherman 4' Fee	MD Reference:	KB @ 3365.00usft (Silver Oak 3)
Well:	#3H	North Reference:	Grid
Wellbore:	WB1 / Job #1512624	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR

Project	Eddy County, NM (NAD27 NME)		
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	Sherman 4' Fee		
Site Position:		Northing:	612,151.80 usft
From:	Map	Easting:	485,212.40 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 40' 58.42381 N
		Longitude:	104° 22' 53.02452 W
		Grid Convergence:	-0.03 °

Well	#3H		
Well Position	+N-S	0.00 usft	Northing:
	+E-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 40' 58.33994 N
		Longitude:	104° 23' 7.29459 W
		Ground Level:	3,347.00 usft

Wellbore	WB1 / Job #1512624		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2015	1/9/2015	7.62
			Dip Angle
			(°)
			60.38
			Field Strength
			(nT)
			48,373

Design	Surveys (Silver Oak 3)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			359.99

Survey Program	Date 1/14/2015		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	2,442.00	VES Gyro Survey (WB1 / Job #1512624)	NS-GYRO-MS
2,541.00	7,587.00	Phoenix MWD Surveys (WB1 / Job #1512)	PHX+MWD+IGRF
			Description
			North sensing gyrocompassing m/s
			PHX+MWD+IGRF v3: standard declination

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.68	275.35	100.00	0.06	-0.59	0.06	0.68	0.68	0.00
200.00	0.63	281.78	199.99	0.22	-1.72	0.22	0.09	-0.05	6.43
300.00	0.47	310.08	299.99	0.60	-2.57	0.60	0.31	-0.16	28.30
400.00	0.92	320.72	399.98	1.48	-3.39	1.49	0.47	0.45	10.64
500.00	1.13	294.91	499.96	2.52	-4.80	2.52	0.50	0.21	-25.81
600.00	1.17	301.98	599.94	3.48	-6.56	3.48	0.15	0.04	7.07
700.00	1.02	292.42	699.93	4.36	-8.25	4.36	0.24	-0.15	-9.56
800.00	0.64	276.75	799.91	4.76	-9.62	4.76	0.44	-0.38	-15.67
900.00	0.58	274.37	899.91	4.87	-10.68	4.87	0.07	-0.06	-2.38



Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM (NAD27/NME)	TVD Reference:	KB @ 3365.00usft (Silver Oak 3)
Site:	Sherman 4 Fee	MD Reference:	KB @ 3365.00usft (Silver Oak 3)
Well:	#3H	North Reference:	Grid
Wellbore:	WB1//Job #1512624	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR

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)
1,000.00	0.68	285.63	999.90	5.07	-11.76	5.07	0.16	0.10	11.26
1,100.00	0.74	282.56	1,099.90	5.37	-12.96	5.37	0.07	0.06	-3.07
1,200.00	0.92	279.36	1,199.88	5.64	-14.38	5.64	0.19	0.18	-3.20
1,300.00	0.83	278.26	1,299.87	5.87	-15.89	5.87	0.09	-0.09	-1.10
1,400.00	0.63	279.22	1,399.87	6.06	-17.15	6.07	0.20	-0.20	0.96
1,500.00	0.76	285.21	1,499.86	6.33	-18.33	6.33	0.15	0.13	5.99
1,600.00	0.60	275.62	1,599.85	6.55	-19.49	6.55	0.20	-0.16	-9.59
1,700.00	0.89	289.49	1,699.84	6.86	-20.75	6.86	0.34	0.29	13.87
1,800.00	0.65	285.64	1,799.83	7.27	-22.03	7.28	0.25	-0.24	-3.85
1,900.00	0.62	291.69	1,899.83	7.63	-23.08	7.63	0.07	-0.03	6.05
2,000.00	0.44	302.01	1,999.82	8.03	-23.90	8.03	0.20	-0.18	10.32
2,100.00	0.36	289.84	2,099.82	8.34	-24.52	8.34	0.12	-0.08	-12.17
2,200.00	0.29	283.76	2,199.82	8.51	-25.07	8.51	0.08	-0.07	-6.08
2,300.00	0.29	297.33	2,299.82	8.68	-25.54	8.69	0.07	0.00	13.57
2,400.00	0.19	272.52	2,399.82	8.81	-25.93	8.81	0.14	-0.10	-24.81
2,442.00	0.13	267.64	2,441.82	8.81	-26.04	8.81	0.15	-0.14	-11.62
Tie-on to VES Gyro Survey									
2,541.00	0.40	64.10	2,540.82	8.95	-25.85	8.96	0.53	0.27	158.04
First Phoenix MWD Survey									
2,572.00	3.60	11.50	2,571.79	9.96	-25.55	9.96	10.88	10.32	-169.68
2,604.00	6.60	0.40	2,603.66	12.78	-25.34	12.78	9.83	9.38	-34.69
2,635.00	9.50	355.70	2,634.36	17.11	-25.52	17.12	9.59	9.35	-15.16
2,666.00	12.60	353.90	2,664.78	23.03	-26.07	23.03	10.06	10.00	-5.81
2,697.00	15.80	352.90	2,694.83	30.58	-26.95	30.58	10.35	10.32	-3.23
2,728.00	19.30	352.10	2,724.38	39.84	-28.18	39.85	11.32	11.29	-2.58
2,760.00	22.30	352.60	2,754.29	51.11	-29.69	51.11	9.39	9.38	1.56
2,791.00	25.70	354.10	2,782.61	63.63	-31.14	63.63	11.14	10.97	4.84
2,823.00	29.20	356.00	2,811.00	78.32	-32.40	78.33	11.27	10.94	5.94
2,855.00	32.60	357.50	2,838.45	94.73	-33.32	94.73	10.89	10.63	4.69
2,886.00	35.50	357.70	2,864.14	112.07	-34.04	112.07	9.36	9.35	0.65
2,918.00	39.20	358.10	2,889.57	131.46	-34.75	131.47	11.59	11.56	1.25
2,950.00	42.60	359.10	2,913.75	152.41	-35.26	152.41	10.82	10.63	3.13
2,981.00	45.60	0.20	2,936.01	173.98	-35.38	173.98	9.99	9.68	3.55
3,012.00	49.10	0.70	2,957.01	196.77	-35.20	196.78	11.35	11.29	1.61
3,044.00	52.50	0.60	2,977.24	221.56	-34.92	221.57	10.63	10.63	-0.31
3,075.00	55.30	0.40	2,995.50	246.61	-34.70	246.61	9.05	9.03	-0.65
3,107.00	58.40	0.20	3,013.00	273.40	-34.56	273.40	9.70	9.69	-0.63
3,139.00	61.30	1.10	3,029.07	301.06	-34.24	301.07	9.38	9.06	2.81
3,170.00	64.00	2.50	3,043.31	328.58	-33.38	328.59	9.59	8.71	4.52
3,202.00	66.80	3.50	3,056.63	357.63	-31.85	357.64	9.20	8.75	3.13
3,233.00	69.00	4.00	3,068.29	386.29	-29.97	386.30	7.25	7.10	1.61
3,265.00	71.40	3.40	3,079.13	416.33	-28.03	416.34	7.70	7.50	-1.88
3,296.00	73.90	3.10	3,088.37	445.87	-26.35	445.88	8.12	8.06	-0.97



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well: #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3365.00usft (Silver Oak 3)
Site:	Sherman 4 Fee	MD Reference:	KB @ 3365.00usft (Silver Oak 3)
Well:	#3H	North Reference:	Grid
Wellbore:	WB1 / Job #1512624	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR

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)
3,328.00	75.90	2.60	3,096.71	476.73	-24.82	476.73	6.43	6.25	-1.56
3,360.00	77.60	2.40	3,104.04	507.85	-23.46	507.85	5.35	5.31	-0.63
3,391.00	80.10	2.30	3,110.04	538.23	-22.21	538.24	8.07	8.06	-0.32
3,422.00	82.40	2.70	3,114.75	568.84	-20.88	568.84	7.53	7.42	1.29
3,453.00	84.90	2.70	3,118.18	599.61	-19.42	599.62	8.06	8.06	0.00
3,505.00	89.90	2.80	3,120.54	651.48	-16.93	651.49	9.62	9.62	0.19
3,601.00	90.80	3.00	3,119.95	747.36	-12.08	747.36	0.96	0.94	0.21
3,695.00	90.60	1.90	3,118.80	841.26	-8.06	841.27	1.19	-0.21	-1.17
3,789.00	90.50	0.40	3,117.90	935.24	-6.17	935.24	1.60	-0.11	-1.60
3,885.00	90.60	0.70	3,116.98	1,031.23	-5.25	1,031.23	0.33	0.10	0.31
3,980.00	90.90	359.80	3,115.74	1,126.22	-4.84	1,126.22	1.00	0.32	-0.95
4,075.00	90.10	359.00	3,114.91	1,221.21	-5.83	1,221.21	1.19	-0.84	-0.84
4,169.00	89.80	359.00	3,114.99	1,315.19	-7.47	1,315.20	0.32	-0.32	0.00
4,265.00	90.20	360.00	3,114.99	1,411.19	-8.31	1,411.19	1.12	0.42	1.04
4,358.00	90.90	0.40	3,114.10	1,504.18	-7.98	1,504.19	0.87	0.75	0.43
4,453.00	90.30	360.00	3,113.10	1,599.18	-7.65	1,599.18	0.76	-0.63	-0.42
4,548.00	90.20	359.80	3,112.69	1,694.18	-7.82	1,694.18	0.24	-0.11	-0.21
4,642.00	90.30	359.70	3,112.28	1,788.17	-8.23	1,788.18	0.15	0.11	-0.11
4,737.00	90.60	359.30	3,111.53	1,883.17	-9.06	1,883.17	0.53	0.32	-0.42
4,831.00	90.90	359.90	3,110.30	1,977.16	-9.71	1,977.16	0.71	0.32	0.64
4,926.00	91.30	360.00	3,108.48	2,072.14	-9.80	2,072.14	0.43	0.42	0.11
5,021.00	90.60	0.30	3,106.90	2,167.12	-9.55	2,167.13	0.80	-0.74	0.32
5,116.00	90.60	0.40	3,105.91	2,262.12	-8.97	2,262.12	0.11	0.00	0.11
5,211.00	91.00	0.30	3,104.58	2,357.11	-8.39	2,357.11	0.43	0.42	-0.11
5,305.00	90.80	359.60	3,103.10	2,451.09	-8.47	2,451.10	0.77	-0.21	-0.74
5,400.00	90.20	360.00	3,102.28	2,546.09	-8.80	2,546.09	0.76	-0.63	0.42
5,494.00	90.00	0.10	3,102.11	2,640.09	-8.72	2,640.09	0.24	-0.21	0.11
5,589.00	90.20	0.10	3,101.95	2,735.09	-8.55	2,735.09	0.21	0.21	0.00
5,684.00	90.40	0.10	3,101.45	2,830.09	-8.39	2,830.09	0.21	0.21	0.00
5,779.00	90.30	359.90	3,100.87	2,925.09	-8.39	2,925.09	0.24	-0.11	-0.21
5,873.00	90.60	359.90	3,100.13	3,019.08	-8.55	3,019.08	0.32	0.32	0.00
5,968.00	90.60	359.80	3,099.13	3,114.08	-8.80	3,114.08	0.11	0.00	-0.11
6,062.00	90.80	359.60	3,097.99	3,208.07	-9.29	3,208.07	0.30	0.21	-0.21
6,157.00	90.90	0.30	3,096.58	3,303.06	-9.37	3,303.06	0.74	0.11	0.74
6,252.00	90.60	360.00	3,095.33	3,398.05	-9.13	3,398.05	0.45	-0.32	-0.32
6,347.00	90.30	0.30	3,094.59	3,493.05	-8.88	3,493.05	0.45	-0.32	0.32
6,442.00	90.50	1.00	3,093.92	3,588.04	-7.80	3,588.04	0.77	0.21	0.74
6,537.00	90.80	1.10	3,092.85	3,683.01	-6.06	3,683.02	0.33	0.32	0.11
6,631.00	91.00	1.70	3,091.37	3,776.97	-3.76	3,776.97	0.67	0.21	0.64
6,726.00	89.90	1.00	3,090.62	3,871.94	-1.52	3,871.94	1.37	-1.16	-0.74
6,820.00	89.70	0.40	3,090.95	3,965.93	-0.38	3,965.93	0.67	-0.21	-0.64
6,914.00	89.80	1.10	3,091.36	4,059.93	0.85	4,059.92	0.75	0.11	0.74
7,008.00	89.80	0.70	3,091.69	4,153.91	2.33	4,153.91	0.43	0.00	-0.43
7,102.00	90.40	359.50	3,091.53	4,247.91	2.49	4,247.91	1.43	0.64	-1.28



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well: #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3365.00usft (Silver Oak 3)
Site:	Sherman 4 Fee	MD Reference:	KB @ 3365.00usft (Silver Oak 3)
Well:	#3H	North Reference:	Grid
Wellbore:	WB1 // Job #1512624	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR

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)
7,196.00	90.80	359.80	3,090.54	4,341.90	1.92	4,341.90	0.53	0.43	0.32
7,291.00	91.00	359.60	3,089.05	4,436.89	1.42	4,436.89	0.30	0.21	-0.21
7,385.00	91.40	0.60	3,087.08	4,530.87	1.59	4,530.87	1.15	0.43	1.06
7,479.00	90.90	359.90	3,085.19	4,624.85	2.00	4,624.85	0.92	-0.53	-0.74
7,528.00	90.70	359.70	3,084.51	4,673.84	1.83	4,673.84	0.58	-0.41	-0.41
Last Phoenix MWD Survey									
7,587.00	90.70	359.70	3,083.79	4,732.84	1.52	4,732.84	0.00	0.00	0.00
Projection to TD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,442.00	2,441.82	8.81	-26.04	Tie-on to VES Gyro Survey
2,541.00	2,540.82	8.95	-25.85	First Phoenix MWD Survey
7,528.00	3,084.51	4,673.84	1.83	Last Phoenix MWD Survey
7,587.00	3,083.79	4,732.84	1.52	Projection to TD

Checked By: _____ Approved By: _____ Date: _____