

30-015-41662



NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 24 2015

RECEIVED

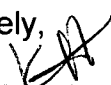
July 1, 2015

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

Attn: Kanicia Castillo

RE: Tarpan 33 Fee 004H

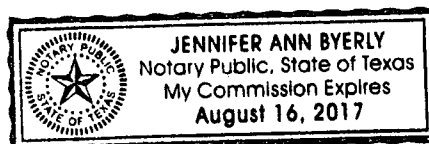
Please find enclosed a copy of the survey from 0' to 2345' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 1 day of July,
A.D., 2015, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: Concho
Well: Tarpan 33 Fee 004H

Rig Name: Silver Oak 3
State/County: New Mexico/Eddy

VS-Azi: 0.00 Degrees

Latitude: 32.69731, Longitude: -104.38768

Grid Convergence Applied = +0.03 degs (NAD 27)

Grid North = True North +0.03 degs



Depth Reference : RKB=18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: hagyar-de_01.ut

Minimum Curvature Method

Report Date/Time: 7/1/2015 / 14:05

VES Survey International

Henderson, CO 80640

303-853-4976

Surveyor: Sean Bratt

Tarpan 33 Fee 004H / API 30-015-41662

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 24 2015

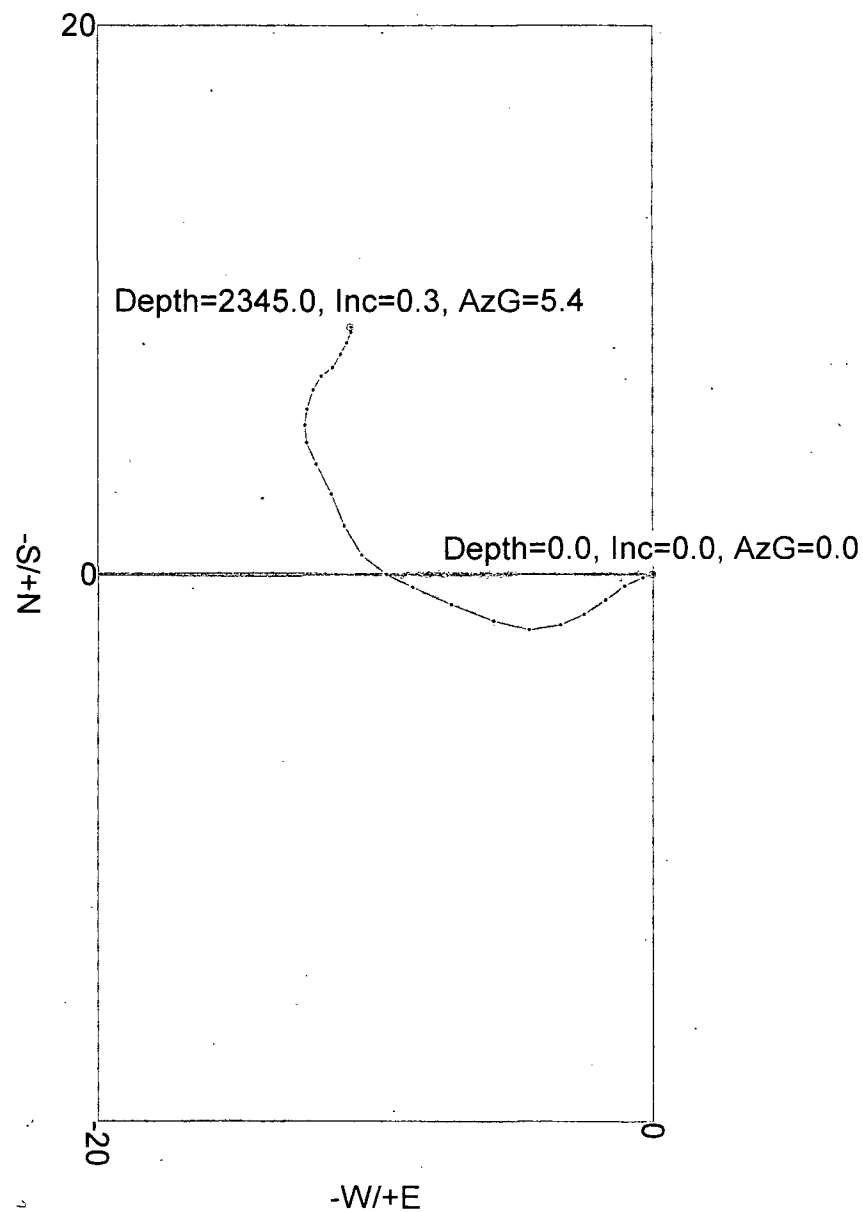
RECEIVED

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	0.46	250.78	100.00	-0.13	-0.38	-0.13	0.40	250.78	0.46
200.00	0.37	238.71	200.00	-0.43	-1.03	-0.43	1.12	247.36	0.13
300.00	0.63	229.93	299.99	-0.95	-1.72	-0.95	1.97	241.16	0.27
400.00	0.44	244.60	399.99	-1.47	-2.49	-1.47	2.89	239.51	0.23
500.00	0.62	245.29	499.98	-1.86	-3.33	-1.86	3.82	240.84	0.18
600.00	0.73	274.95	599.98	-2.03	-4.46	-2.03	4.90	245.52	0.36
700.00	0.81	292.83	699.97	-1.70	-5.75	-1.70	5.99	253.50	0.25
800.00	1.06	290.62	799.95	-1.10	-7.26	-1.10	7.34	261.35	0.25
900.00	0.71	299.99	899.94	-0.47	-8.66	-0.47	8.67	266.90	0.37
1000.00	0.51	292.62	999.94	0.01	-9.61	0.01	9.61	270.07	0.22
1100.00	0.81	318.82	1099.93	0.71	-10.48	0.71	10.50	273.88	0.42
1200.00	0.65	340.82	1199.92	1.78	-11.13	1.78	11.27	279.07	0.32
1300.00	0.79	336.71	1299.91	2.95	-11.59	2.95	11.96	284.27	0.15
1400.00	0.60	327.90	1399.91	4.03	-12.14	4.03	12.79	288.36	0.22
1500.00	0.39	347.80	1499.90	4.81	-12.49	4.81	13.39	291.06	0.27
1600.00	0.35	332	1599.90	5.45	-12.55	5.45	13.68	293.48	0.11

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
1700.00	0.32	12.46	1699.90	6.03	-12.47	6.03	13.85	295.79	0.06
1800.00	0.52	19.95	1799.90	6.72	-12.26	6.72	13.98	298.74	0.21
1900.00	0.19	59.67	1899.90	7.23	-11.96	7.23	13.98	301.15	0.39
2000.00	0.42	49.16	1999.89	7.55	-11.54	7.55	13.80	303.20	0.24
2100.00	0.27	1.40	2099.89	8.03	-11.26	8.03	13.83	305.49	0.31
2200.00	0.32	48.77	2199.89	8.45	-11.04	8.45	13.90	307.41	0.24
2300.00	0.24	346.16	2299.89	8.83	-10.89	8.83	14.02	309.05	0.30
2345.00	0.26	5.37	2344.89	9.02	-10.90	9.02	14.15	309.62	0.19



VES Survey International
Henderson, CO 80640
303-853-4976
Surveyor: Sean Bratt
Tarpan 33 Fee 004H / API 30-015-41662



V.E.S. Survey Date: 6/28/2015



PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 24 2015

RECEIVED

July 6, 2015

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

RE: Tarpan 33 Fee #4H
150' FSL & 2310' FWL
Sec. 3, T18S, R26E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

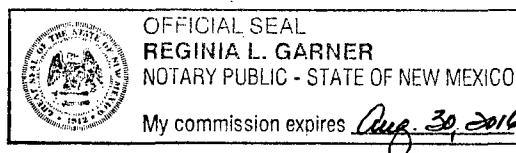
Very truly yours,

A handwritten signature in cursive script that reads "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 6th day of July, 2015.

A handwritten signature in cursive script that reads "Regina L. Garner".
Notary Public

TARPAN 33 FEE #4H

#	Date	Depth	Deviation	Direction	TVD
6/26/2015	168	0.70	0.00	0.00	
6/26/2015	405	0.60	0.00	0.00	
6/26/2015	674	0.60	0.00	0.00	
6/26/2015	927	0.70	0.00	0.00	
6/26/2015	1134	0.90	0.00	0.00	
6/27/2015	1559	0.20	0.00	0.00	
6/28/2015	2001	0.50	0.00	0.00	
6/28/2015	2335	0.70	0.00	0.00	
6/29/2015	2448	3.60	354.60	2447.00	
6/29/2015	2479	5.70	355.10	2487.00	
6/29/2015	2542	11.10	356.90	2541.00	
6/29/2015	2574	13.50	356.90	2572.00	
6/29/2015	2606	15.80	357.60	2603.00	
6/29/2015	2637	18.50	359.10	2632.00	
6/29/2015	2732	27.80	358.70	0.00	
6/29/2015	2763	31.00	358.30	0.00	
6/29/2015	2795	34.10	358.70	0.00	
6/29/2015	2827	37.40	358.70	0.00	
6/29/2015	2858	40.80	358.50	0.00	
6/29/2015	2890	44.20	358.20	0.00	
6/29/2015	3048	59.90	359.30	0.00	
6/29/2015	3080	63.60	359.40	0.00	
6/29/2015	3111	66.80	359.60	0.00	
6/29/2015	3143	69.80	359.40	0.00	
6/29/2015	3175	72.80	359.00	0.00	
6/29/2015	3206	76.00	359.90	0.00	
6/30/2015	3353	90.90	359.50	0.00	
6/30/2015	3384	92.40	359.50	0.00	
6/30/2015	3416	92.40	359.50	0.00	
6/30/2015	3511	92.80	358.80	0.00	
6/30/2015	3606	91.60	359.20	0.00	
6/30/2015	3702	91.90	358.90	0.00	
6/30/2015	3795	91.00	358.20	0.00	
7/1/2015	3984	90.40	1.00	3001.00	
7/1/2015	4079	92.00	0.30	2999.00	
7/1/2015	4173	92.30	360.00	2995.00	
7/1/2015	4269	91.60	0.10	2992.00	
7/1/2015	4362	91.50	0.20	2990.00	
7/1/2015	4457	91.70	0.20	2987.00	
7/1/2015	4551	91.90	0.40	0.00	
7/1/2015	4645	92.00	359.80	0.00	
7/1/2015	4741	92.00	0.50	0.00	
7/1/2015	4834	92.20	360.00	0.00	

#	Date	Depth	Deviation	Direction	TVD
	7/1/2015	4928	92.30	359.60	0.00
	7/1/2015	5023	91.20	359.96	0.00
	7/1/2015	5118	91.40	0.30	0.00
	7/2/2015	5213	91.30	0.80	2963.00
	7/2/2015	5307	91.10	359.90	2961.00
	7/2/2015	5402	92.10	0.30	2959.00
	7/2/2015	5497	91.80	0.10	2955.00
	7/2/2015	5592	91.80	359.70	2952.00
	7/2/2015	5687	92.00	359.20	2949.00
	7/2/2015	5782	92.10	358.70	0.00
	7/2/2015	5877	92.40	359.10	0.00
	7/2/2015	5908	92.50	358.40	0.00
#	EOF				



NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 24 2015

RECEIVED

COG Operating LLC

Eddy County, NM (NAD27 NME)

Tarpan 33 Fee

#4H

OH / Job #1513768

Design: Surveys (Silver Oak 3)

Standard Survey Report

03 July, 2015





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3396.00usft (Silver Oak 3)
Site:	Tarpan 33 Fee	MD Reference:	KB @ 3396.00usft (Silver Oak 3)
Well:	#4H	North Reference:	Grid
Wellbore:	OH / Job #1513768	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:	Tarpan 33 Fee		
Site Position:		Northing:	617,397.20 usft
From:	Map	Easting:	483,282.60 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 41' 50.32117 N
		Longitude:	104° 23' 15.63587 W
		Grid Convergence:	-0.03 °

Well:	#4H					
Well Position	+N/-S	0.00 usft	Northing:	617,397.20 usft	Latitude:	32° 41' 50.32117 N
	+E/-W	0.00 usft	Easting:	483,282.60 usft	Longitude:	104° 23' 15.63587 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,378.00 usft

Wellbore						OH / Job #1513768																													
Magnetics						Model Name						Sample Date						Declination						Dip Angle						Field Strength					
																		(°)						(°)						(nT)					
						HDGM						6/23/2015						7.60						60.58						48,398					

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	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	359.55	

Survey Program	Date	7/3/2015		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100.00	2,345.00	VES Gyro Surveys (OH / Job #1513768)	NS-GYRO-MS	North sensing gyrocompassing m/s
2,448.00	5,968.00	Phoenix MWD Survey (OH / Job #1513768)	PHX+MWD+HDGM	PHX+MWD+HDGM

Survey									
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(usft)	(°)	(°)	(usft)	(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	0.46	250.78	100.00	-0.13	-0.38	-0.13	0.46	0.46	0.00
200.00	0.37	238.71	200.00	-0.43	-1.03	-0.42	0.13	-0.09	-12.07
300.00	0.63	229.93	299.99	-0.95	-1.73	-0.94	0.27	0.26	-8.78
400.00	0.44	244.60	399.99	-1.47	-2.50	-1.45	0.23	-0.19	14.67
500.00	0.62	245.29	499.98	-1.86	-3.34	-1.84	0.18	0.18	0.69
600.00	0.73	274.95	599.98	-2.03	-4.46	-2.00	0.36	0.11	29.66
700.00	0.81	292.83	699.97	-1.71	-5.75	-1.66	0.25	0.08	17.88
800.00	1.06	290.62	799.95	-1.11	-7.27	-1.05	0.25	0.25	-2.21
900.00	0.71	299.99	899.94	-0.47	-8.67	-0.40	0.38	-0.35	9.37

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County NM (NAD27-NME)	TVD Reference:	KB @ 3396.00usft (Silver Oak 3)
Site:	Tarpan 33 Fee	MD Reference:	KB @ 3396.00usft (Silver Oak 3)
Well:	#4H	North Reference:	Grid
Wellbore:	OH / Job #1513768	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	0.51	292.62	999.94	0.01	-9.62	0.09	0.21	-0.20	-7.37
1,100.00	0.81	318.82	1,099.93	0.71	-10.49	0.80	0.42	0.30	26.20
1,200.00	0.65	340.82	1,199.92	1.78	-11.14	1.87	0.32	-0.16	22.00
1,300.00	0.79	336.71	1,299.91	2.95	-11.60	3.04	0.15	0.14	-4.11
1,400.00	0.60	327.90	1,399.91	4.03	-12.15	4.12	0.22	-0.19	-8.81
1,500.00	0.39	347.80	1,499.90	4.80	-12.50	4.90	0.27	-0.21	19.90
1,600.00	0.35	332	1,599.90	5.44	-12.56	5.54	0.11	-0.04	15.52
1,700.00	0.32	12.46	1,699.90	6.02	-12.48	6.12	0.06	-0.03	9.14
1,800.00	0.52	19.95	1,799.90	6.72	-12.26	6.81	0.21	0.20	7.49
1,900.00	0.19	59.67	1,899.90	7.23	-11.97	7.32	0.39	-0.33	39.72
2,000.00	0.42	49.16	1,999.89	7.55	-11.55	7.64	0.24	0.23	-10.51
2,100.00	0.27	1.40	2,099.89	8.03	-11.26	8.12	0.31	-0.15	-47.76
2,200.00	0.32	48.77	2,199.89	8.45	-11.05	8.53	0.24	0.05	47.37
2,300.00	0.24	346.16	2,299.89	8.83	-10.89	8.92	0.30	-0.08	-62.61
2,345.00	0.26	5.37	2,344.89	9.03	-10.90	9.11	0.19	0.04	42.69
Tie-on to VES Gyro Survey									
2,448.00	3.60	354.60	2,447.82	12.48	-11.18	12.57	3.25	3.24	-10.46
First Phoenix MWD Survey									
2,479.00	5.70	355.10	2,478.71	14.98	-11.41	15.07	6.78	6.77	1.61
2,511.00	8.30	356.10	2,510.47	18.87	-11.70	18.96	8.13	8.13	3.13
2,542.00	11.10	356.90	2,541.03	24.09	-12.01	24.18	9.04	9.03	2.58
2,574.00	13.50	356.90	2,572.29	30.89	-12.38	30.99	7.50	7.50	0.00
2,606.00	15.80	357.60	2,603.25	38.97	-12.77	39.07	7.21	7.19	2.19
2,637.00	18.50	359.10	2,632.87	48.11	-13.02	48.21	8.83	8.71	4.84
2,669.00	21.50	1.00	2,662.93	59.05	-13.00	59.15	9.59	9.38	5.94
2,700.00	24.60	0.40	2,691.45	71.19	-12.85	71.29	10.03	10.00	-1.94
2,732.00	27.80	358.70	2,720.16	85.31	-12.98	85.41	10.27	10.00	-5.31
2,763.00	31.00	358.30	2,747.17	100.52	-13.38	100.63	10.34	10.32	-1.29
2,795.00	34.10	358.70	2,774.14	117.73	-13.83	117.84	9.71	9.69	1.25
2,827.00	37.40	358.70	2,800.10	136.42	-14.25	136.53	10.31	10.31	0.00
2,858.00	40.80	358.50	2,824.16	155.96	-14.73	156.07	10.98	10.97	-0.65
2,890.00	44.20	358.20	2,847.75	177.57	-15.35	177.68	10.64	10.63	-0.94
2,921.00	47.50	358.40	2,869.34	199.80	-16.01	199.92	10.66	10.65	0.65
2,953.00	51.00	358.80	2,890.22	224.03	-16.60	224.15	10.98	10.94	1.25
2,985.00	54.20	358.80	2,909.66	249.44	-17.13	249.57	10.00	10.00	0.00
3,017.00	56.90	358.80	2,927.76	275.82	-17.69	275.95	8.44	8.44	0.00
3,048.00	59.90	359.30	2,944.00	302.22	-18.12	302.35	9.77	9.68	1.61
3,080.00	63.60	359.40	2,959.14	330.40	-18.44	330.54	11.57	11.56	0.31
3,111.00	66.80	359.60	2,972.14	358.54	-18.69	358.67	10.34	10.32	0.65
3,143.00	69.80	359.40	2,983.97	388.27	-18.95	388.40	9.39	9.38	-0.63
3,175.00	72.80	359.00	2,994.23	418.57	-19.37	418.71	9.45	9.38	-1.25
3,206.00	76.00	358.90	3,002.57	448.42	-19.92	448.56	10.33	10.32	-0.32
3,237.00	79.20	359.50	3,009.22	478.69	-20.34	478.83	10.49	10.32	1.94



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County NM (NAD27/NME)	TVD Reference:	KB @ 3396.00usft (Silver Oak 3)
Site:	Tarpan 33 Fee	MD Reference:	KB @ 3396.00usft (Silver Oak 3)
Well:	#4H	North Reference:	Grid
Wellbore:	OH / Job #1513766	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)
3,269.00	82.60	0.10	3,014.28	510.28	-20.45	510.43	10.79	10.63	1.88
3,301.00	85.60	360.00	3,017.57	542.11	-20.42	542.25	9.38	9.38	-0.31
3,332.00	88.90	359.80	3,019.06	573.07	-20.47	573.21	10.66	10.65	-0.65
3,353.00	90.90	359.50	3,019.10	594.07	-20.60	594.21	9.63	9.52	-1.43
3,384.00	92.40	359.50	3,018.20	625.05	-20.87	625.20	4.84	4.84	0.00
3,416.00	92.40	359.50	3,016.86	657.02	-21.15	657.17	0.00	0.00	0.00
3,511.00	92.80	358.80	3,012.55	751.91	-22.56	752.07	0.85	0.42	-0.74
3,606.00	91.60	359.20	3,008.91	846.83	-24.22	846.99	1.33	-1.26	0.42
3,702.00	91.90	358.90	3,005.98	942.77	-25.81	942.94	0.44	0.31	-0.31
3,795.00	91.00	358.20	3,003.62	1,035.71	-28.16	1,035.90	1.23	-0.97	-0.75
3,890.00	90.60	359.70	3,002.30	1,130.68	-29.90	1,130.88	1.63	-0.42	1.58
3,984.00	90.40	1.00	3,001.48	1,224.67	-29.33	1,224.86	1.40	-0.21	1.38
4,079.00	92.00	0.30	2,999.49	1,319.64	-28.25	1,319.82	1.84	1.68	-0.74
4,173.00	92.30	360.00	2,995.96	1,413.57	-28.00	1,413.75	0.45	0.32	-0.32
4,269.00	91.60	0.10	2,992.69	1,509.52	-27.92	1,509.69	0.74	-0.73	0.10
4,362.00	91.50	0.20	2,990.18	1,602.48	-27.68	1,602.65	0.15	-0.11	0.11
4,457.00	91.70	0.20	2,987.52	1,697.45	-27.34	1,697.61	0.21	0.21	0.00
4,551.00	91.90	0.40	2,984.57	1,791.40	-26.85	1,791.55	0.30	0.21	0.21
4,645.00	92.00	359.80	2,981.37	1,885.34	-26.69	1,885.50	0.65	0.11	-0.64
4,741.00	92.00	0.50	2,978.02	1,981.28	-26.44	1,981.43	0.73	0.00	0.73
4,834.00	92.20	360.00	2,974.62	2,074.22	-26.03	2,074.36	0.58	0.22	-0.54
4,928.00	92.30	359.60	2,970.92	2,168.15	-26.36	2,168.29	0.44	0.11	-0.43
5,023.00	91.20	359.90	2,968.02	2,263.10	-26.77	2,263.24	1.20	-1.16	0.32
5,118.00	91.40	0.30	2,965.87	2,358.08	-26.61	2,358.21	0.47	0.21	0.42
5,213.00	91.30	0.80	2,963.63	2,453.04	-25.70	2,453.17	0.54	-0.11	0.53
5,307.00	91.10	359.90	2,961.66	2,547.02	-25.12	2,547.14	0.98	-0.21	-0.96
5,402.00	92.10	0.30	2,959.01	2,641.98	-24.96	2,642.10	1.13	1.05	0.42
5,497.00	91.80	0.10	2,955.78	2,736.93	-24.63	2,737.04	0.38	-0.32	-0.21
5,592.00	91.80	359.70	2,952.79	2,831.88	-24.79	2,831.99	0.42	0.00	-0.42
5,687.00	92.00	359.20	2,949.64	2,926.82	-25.70	2,926.93	0.57	0.21	-0.53
5,782.00	92.10	358.70	2,946.24	3,021.75	-27.44	3,021.87	0.54	0.11	-0.53
5,877.00	92.40	359.10	2,942.51	3,116.65	-29.26	3,116.79	0.53	0.32	0.42
5,908.00	92.50	358.40	2,941.19	3,147.62	-29.94	3,147.76	2.28	0.32	-2.26
Last Phoenix MWD Survey									
5,968.00	92.50	358.40	2,938.57	3,207.54	-31.61	3,207.69	0.00	0.00	0.00
Projection to TD									



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H:
Project:	Eddy County, NM (NAD27-NME)	TVD Reference:	KB @ 3396.00usft (Silver Oak 3)
Site:	Tarpan 33 Fee	MD Reference:	KB @ 3396.00usft (Silver Oak 3)
Well:	#4H	North Reference:	Grid
Wellbore:	OH / Job #1513768	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,345.00	2,344.89	9.03	-10.90	Tie-on to VES Gyro Survey
2,448.00	2,447.82	12.48	-11.18	First Phoenix MWD Survey
5,908.00	2,941.19	3,147.62	-29.94	Last Phoenix MWD Survey
5,968.00	2,938.57	3,207.54	-31.61	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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