

15-39779



NM OIL CONSERVATION
ARTESIA DISTRICT

FEB 23 2015

RECEIVED


October 29, 2014

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

Attn: Kanicia Castillo


RE: **Stonewall 9 Fee No. 004H**

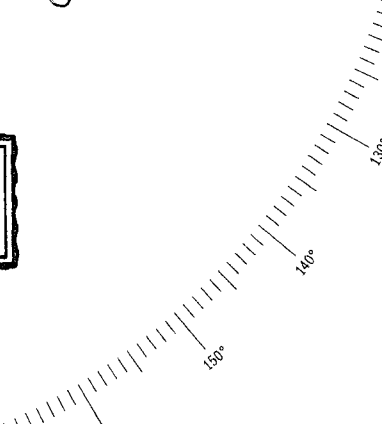
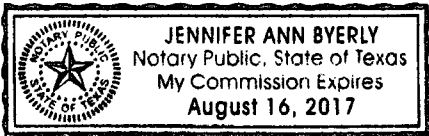
Please find enclosed a copy of the survey from 0.00' to 2348.00' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 29 day of October A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas



Company: COG OPERATING, LLC (CONCHO)

Lease/Well: STONEWALL 9 FEE/NO. 004H



Rig Name: SILVEROAK #3

State/County: NEW MEXICO/EDDY

Latitude: 32.68, Longitude: -104.38

GRID North is 0.03 Degrees West of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB: 18 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 10/29/2014 / 16:20

VES Survey International

West Texas

(432) 563-5444

Surveyor: Jordan Shelleby

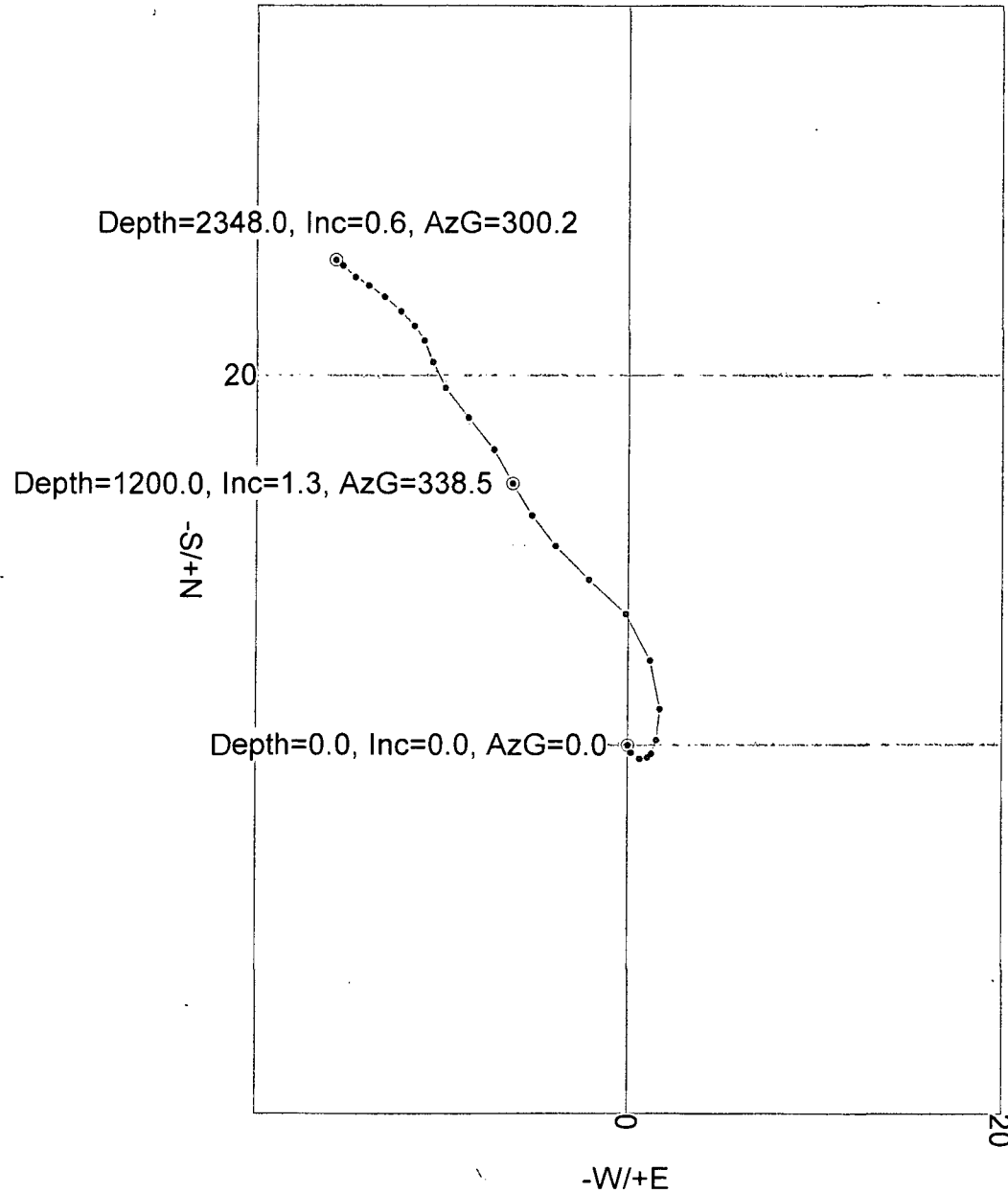
Stonewall 9 Fee No. 004H / API 30-015-39779

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	0.50	155.97	100.00	-0.40	0.18	-0.40	0.43	155.97	0.50
200.00	0.32	80.59	200.00	-0.74	0.63	-0.74	0.98	139.75	0.52
300.00	0.17	74.90	300.00	-0.66	1.05	-0.66	1.24	122.08	0.15
400.00	0.18	24.60	400.00	-0.48	1.26	-0.48	1.35	110.87	0.15
500.00	0.74	19.29	499.99	0.27	1.54	0.27	1.56	80.19	0.56
600.00	1.24	358.17	599.98	1.95	1.71	1.95	2.60	41.27	0.61
700.00	1.86	341.99	699.94	4.57	1.18	4.57	4.72	14.44	0.75
800.00	1.46	319.93	799.90	7.09	-0.14	7.09	7.09	358.86	0.75
900.00	1.67	307.30	899.86	8.94	-2.11	8.94	9.19	346.69	0.40
1000.00	1.30	326.20	999.83	10.77	-3.90	10.77	11.45	340.07	0.60
1100.00	1.07	318.42	1099.81	12.41	-5.16	12.41	13.44	337.44	0.29
1200.00	1.29	338.46	1199.79	14.15	-6.19	14.15	15.44	336.39	0.46
1300.00	1.13	322.56	1299.77	15.98	-7.20	15.98	17.53	335.75	0.37
1400.00	1.40	320.32	1399.74	17.70	-8.58	17.70	19.67	334.15	0.27
1500.00	0.94	324.39	1499.72	19.31	-9.83	19.31	21.66	333.01	0.47
1600.00	0.90	342.59	1599.71	20.72	-10.54	20.72	23.25	333.03	0.29
1700.00	0.53	331.28	1699.70	21.88	-11.00	21.88	24.49	333.30	0.39
1800.00	0.54	323.86	1799.69	22.67	-11.51	22.67	25.42	333.09	0.07

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	0.69	312.44	1899.69	23.46	-12.23	23.46	26.45	332.47	0.19
2000.00	0.67	310.78	1999.68	24.24	-13.11	24.24	27.56	331.59	0.03
2100.00	0.54	299.20	2099.68	24.85	-13.96	24.85	28.50	330.67	0.18
2200.00	0.44	305.34	2199.67	25.30	-14.68	25.30	29.25	329.87	0.11
2300.00	0.61	319.11	2299.67	25.93	-15.34	25.93	30.13	329.38	0.22
2348.00	0.58	300.16	2347.67	26.24	-15.72	26.24	30.59	329.07	0.42



VES Survey International
West Texas
(432) 563-5444
Surveyor: Jordan Shelleby
Stonewall 9 Fee No. 004H / API 30-015-39779



V.E.S. Survey Date: 10/12/2014



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

NM OIL CONSERVATION
ARTESIA DISTRICT

FEB 23 2015

RECEIVED

October 20, 2014

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

RE: Stonewall 9 Fee 4H
150' FNL & 990' FEL
Sec. 9, T19S, R26E
Eddy County, New Mexico

Dear Sir,

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

Very truly yours,

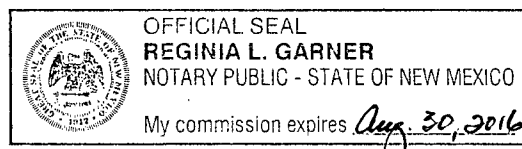
A handwritten signature in black ink, appearing to read "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 20th day of October, 2014.

A handwritten signature in black ink, appearing to read "Regina L. Garner".

Notary Public

STONEWALL 9 FEE #4 H

Date	Depth	Deviation	Direction
10/10/2014	200	0.40	0.00
10/10/2014	440	0.00	0.00
10/10/2014	926	1.20	0.00
10/10/2014	1145	1.10	0.00
10/12/2014	1420	0.70	0.00
10/12/2014	1669	0.30	0.00
10/12/2014	2168	0.80	0.00
10/13/2014	2550	0.70	298.70
10/13/2014	2580	1.80	191.90
10/13/2014	2612	5.40	176.50
10/13/2014	2643	7.40	171.90
10/13/2014	2674	10.20	169.70
10/13/2014	2705	13.10	167.40
10/13/2014	2736	15.90	167.30
10/13/2014	2768	18.40	169.30
10/13/2014	2799	21.41	170.00
10/13/2014	2820	24.60	169.90
10/13/2014	2861	27.80	169.80
10/14/2014	2923	33.90	170.30
10/14/2014	2955	37.50	171.00
10/14/2014	2986	41.00	170.90
10/14/2014	3017	43.90	170.90
10/14/2014	3048	46.70	171.40
10/14/2014	3079	49.80	172.90
10/14/2014	3110	53.70	174.20
10/14/2014	3142	57.10	171.30
10/14/2014	3235	66.70	173.10
10/14/2014	3266	69.60	172.90
10/14/2014	3297	72.50	172.60
10/14/2014	3328	74.80	172.50
10/14/2014	3359	78.20	171.90
10/14/2014	3390	81.70	172.40
10/15/2014	3509	90.90	174.70
10/15/2014	3571	91.60	174.60
10/15/2014	3665	90.90	175.10
10/15/2014	3759	89.20	178.10
10/15/2014	3853	89.40	179.80
10/15/2014	3946	90.20	180.20
10/15/2014	4039	90.50	179.20
10/15/2014	4133	89.90	178.50
10/15/2014	4320	89.70	178.00
10/15/2014	4414	89.80	179.20
10/15/2014	4507	90.60	177.30

Date	Depth	Deviation	Direction
10/15/2014	4600	90.50	178.50
10/15/2014	4694	89.00	179.80
10/16/2014	4787	89.40	180.10
10/16/2014	4880	89.80	179.50
10/16/2014	4973	90.10	180.00
10/16/2014	5067	89.80	181.00
10/16/2014	5254	89.90	180.40
10/16/2014	5348	90.20	180.00
10/16/2014	5442	90.50	179.60
10/16/2014	5536	90.60	179.50
10/16/2014	5639	91.10	179.10
10/16/2014	5724	91.30	178.90
10/16/2014	5816	91.00	178.20
10/16/2014	5910	90.10	178.20
10/17/2014	6005	90.20	177.20
10/17/2014	6098	89.70	177.50
10/17/2014	6193	88.90	177.20
10/17/2014	6286	89.90	177.30
10/17/2014	6380	90.30	178.30
10/17/2014	6567	89.80	178.50
10/17/2014	6662	89.50	179.00
10/17/2014	6755	89.40	179.60
10/17/2014	6849	89.50	180.20
10/17/2014	6944	90.20	179.30
10/17/2014	7038	90.90	179.20
10/17/2014	7131	90.40	179.20
10/18/2014	7224	89.90	178.90
10/18/2014	7317	90.50	178.50
10/18/2014	7411	89.80	178.90
10/18/2014	7505	89.00	179.10
10/18/2014	7589	89.50	178.20
10/18/2014	7700	89.60	178.80

EOF



NM OIL CONSERVATION
ARTESIA DISTRICT

FEB 23 2015

RECEIVED

COG Operating LLC

Eddy County, NM (NAD27 NME)

Stonewall 9 Fee

#4H

WB1 / Job #1411934

Design: Surveys (Silver Oak 3)

Standard Survey Report

18 October, 2014



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well: #4H
Project:	Eddy County NM (NAD27 NME)	TVD Reference:	KB @ 3357.00usft (Silver Oak 3)
Site:	Stonewall 9 Fee	MD Reference:	KB @ 3357.00usft (Silver Oak 3)
Well:	#4H	North Reference:	Grid
Wellbore:	WB1 / Job #1411934	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR DB

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	Stonewall 9 Fee				
Site Position:	Northing:	611,835.50 usft	Latitude:	32° 40' 55.28160 N	
From: Map	Easting:	482,702.00 usft	Longitude:	104° 23' 22.39586 W	
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.03 °

Well	#4H					
Well Position	+N-S	0.00 usft	Northing:	611,852.20 usft	Latitude:	32° 40' 55.45931 N
	+E-W	0.00 usft	Easting:	485,267.10 usft	Longitude:	104° 22' 52.38292 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,339.00 usft	

Wellbore	WB1 / Job #1411934				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	9/22/2014	7.59	60.39	48,476

Design	Surveys (Silver Oak 3)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/S (usft)	+E/W (usft)	Direction (°)	
	0.00	0.00	0.00	178.19	

Survey/Program	Date 10/18/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	2,348.00	VES Gyro Surveys (WB1 / Job #1411934)	NS-GYRO-MS	North sensing gyrocompassing m/s	
2,455.00	7,760.00	Phoenix MWD Survey (WB1 / Job #14119)	PHX+MWD+IGRF	PHX+MWD+IGRF v3:standard declination	

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.50	155.97	100.00	-0.40	0.18	0.40	0.50	0.50	0.00	
200.00	0.32	80.59	200.00	-0.75	0.63	0.77	0.52	-0.18	-75.38	
300.00	0.17	74.90	300.00	-0.67	1.05	0.70	0.15	-0.15	-5.69	
400.00	0.18	24.60	400.00	-0.49	1.26	0.53	0.15	0.01	-50.30	
500.00	0.74	19.29	499.99	0.27	1.54	-0.22	0.56	0.56	-5.31	
600.00	1.24	358.17	599.98	1.96	1.72	-1.90	0.61	0.50	-21.12	
700.00	1.86	341.99	699.94	4.58	1.18	-4.54	0.75	0.62	-16.18	
800.00	1.46	319.93	799.90	7.10	-0.14	-7.10	0.75	-0.40	-22.06	
900.00	1.67	307.30	899.86	8.96	-2.12	-9.02	0.40	0.21	-12.63	



Phoenix Technology Services
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3357.00usft (Silver Oak 3)
Site:	Stonewall 9 Fee	MD Reference:	KB @ 3357.00usft (Silver Oak 3)
Well:	#4H	North Reference:	Grid
Wellbore:	WB1 / Job #1411934	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR 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)
1,000.00	1.30	326.20	999.83	10.78	-3.91	-10.90	0.61	-0.37	18.90
1,100.00	1.07	318.42	1,099.81	12.43	-5.16	-12.58	0.28	-0.23	-7.78
1,200.00	1.29	338.46	1,199.79	14.17	-6.20	-14.36	0.46	0.22	20.04
1,300.00	1.13	322.56	1,299.76	16.00	-7.21	-16.22	0.37	-0.16	-15.90
1,400.00	1.40	320.32	1,399.74	17.72	-8.59	-17.99	0.27	0.27	-2.24
1,500.00	0.94	324.39	1,499.72	19.33	-9.85	-19.63	0.47	-0.46	4.07
1,600.00	0.90	342.59	1,599.71	20.75	-10.56	-21.07	0.29	-0.04	18.20
1,700.00	0.53	331.28	1,699.70	21.90	-11.02	-22.24	0.39	-0.37	-11.31
1,800.00	0.54	323.86	1,799.69	22.69	-11.52	-23.04	0.07	0.01	-7.42
1,900.00	0.69	312.44	1,899.69	23.48	-12.24	-23.85	0.19	0.15	-11.42
2,000.00	0.67	310.78	1,999.68	24.26	-13.12	-24.67	0.03	-0.02	-1.66
2,100.00	0.54	299.20	2,099.68	24.88	-13.98	-25.30	0.18	-0.13	-11.58
2,200.00	0.44	305.34	2,199.67	25.33	-14.70	-25.78	0.11	-0.10	6.14
2,300.00	0.61	319.11	2,299.67	25.95	-15.36	-26.42	0.21	0.17	13.77
2,348.00	0.58	300.16	2,347.67	26.27	-15.74	-26.75	0.41	-0.06	-39.48
Tie-on to VES Gyro Survey									
2,455.00	0.90	298.20	2,454.66	26.94	-16.95	-27.46	0.30	0.30	-1.83
First Phoenix MWD Survey									
2,487.00	0.80	303.60	2,486.65	27.18	-17.36	-27.71	0.40	-0.31	16.88
2,518.00	0.80	302.10	2,517.65	27.41	-17.72	-27.96	0.07	0.00	-4.84
2,550.00	0.70	298.70	2,549.65	27.63	-18.08	-28.18	0.34	-0.31	-10.63
2,580.00	1.80	191.90	2,579.64	27.25	-18.34	-27.82	7.04	3.67	-356.00
2,612.00	5.40	176.50	2,611.57	25.26	-18.35	-25.82	11.55	11.25	-48.13
2,643.00	7.40	171.90	2,642.38	21.82	-17.98	-22.38	6.66	6.45	-14.84
2,674.00	10.20	169.70	2,673.01	17.15	-17.21	-17.68	9.10	9.03	-7.10
2,705.00	13.10	167.40	2,703.37	11.02	-15.95	-11.51	9.47	9.35	-7.42
2,736.00	15.90	167.30	2,733.38	3.44	-14.25	-3.89	9.03	9.03	-0.32
2,768.00	18.40	169.30	2,763.95	-5.80	-12.35	5.40	8.03	7.81	6.25
2,799.00	21.40	170.00	2,793.10	-16.18	-10.46	15.84	9.71	9.68	2.26
2,830.00	24.60	169.90	2,821.63	-28.10	-8.35	27.82	10.32	10.32	-0.32
2,861.00	27.80	169.80	2,849.44	-41.57	-5.93	41.36	10.32	10.32	-0.32
2,892.00	30.70	169.90	2,876.49	-56.48	-3.26	56.35	9.36	9.35	0.32
2,923.00	33.90	170.30	2,902.69	-72.80	-0.42	72.75	10.35	10.32	1.29
2,955.00	37.50	171.00	2,928.67	-91.22	2.61	91.26	11.32	11.25	2.19
2,986.00	41.00	170.90	2,952.67	-110.59	5.69	110.71	11.29	11.29	-0.32
3,017.00	43.90	170.90	2,975.54	-131.24	9.00	131.46	9.35	9.35	0.00
3,048.00	46.70	171.40	2,997.35	-153.01	12.39	153.33	9.10	9.03	1.61
3,079.00	49.80	172.90	3,017.99	-175.92	15.54	176.33	10.63	10.00	4.84
3,110.00	53.70	174.20	3,037.18	-200.11	18.27	200.59	13.00	12.58	4.19
3,141.00	57.10	174.30	3,054.78	-225.49	20.82	226.04	10.97	10.97	0.32
3,172.00	60.20	174.00	3,070.90	-251.83	23.52	252.44	10.03	10.00	-0.97
3,203.00	63.30	173.80	3,085.57	-278.98	26.42	279.67	10.02	10.00	-0.65
3,235.00	66.70	173.10	3,099.10	-307.78	29.74	308.57	10.81	10.63	-2.19



Phoenix Technology Services
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27/NME)	TVD Reference:	KB @ 3357.00usft (Silver Oak 3)
Site:	Stonewall 9 Fee	MD Reference:	KB @ 3357.00usft (Silver Oak 3)
Well:	#4H	North Reference:	Grid
Wellbore:	WB1 / Job #1411934	Survey/Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak-3)	Database:	Compass 5000, GCR DB

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)
3,266.00	69.60	172.90	3,110.63	-336.34	33.24	337.22	9.37	9.35	-0.65
3,297.00	72.50	172.60	3,120.70	-365.42	36.94	366.41	9.40	9.35	-0.97
3,328.00	74.80	172.50	3,129.42	-394.91	40.80	396.01	7.43	7.42	-0.32
3,359.00	78.20	171.90	3,136.66	-424.77	44.89	425.98	11.13	10.97	-1.94
3,390.00	81.70	172.40	3,142.07	-455.01	49.06	456.33	11.40	11.29	1.61
3,421.00	84.70	172.20	3,145.74	-485.51	53.18	486.95	9.70	9.68	-0.65
3,453.00	87.00	173.20	3,148.06	-517.16	57.24	518.71	7.83	7.19	3.13
3,484.00	88.90	174.00	3,149.16	-547.95	60.69	549.59	6.65	6.13	2.58
3,509.00	90.90	174.70	3,149.21	-572.83	63.15	574.54	8.48	8.00	2.80
3,571.00	91.60	174.60	3,147.86	-634.54	68.93	636.40	1.14	1.13	-0.16
3,665.00	90.90	175.10	3,145.80	-728.14	77.37	730.22	0.92	-0.74	0.53
3,759.00	89.20	178.10	3,145.72	-821.96	82.94	824.17	3.67	-1.81	3.19
3,853.00	89.40	179.80	3,146.87	-915.93	84.66	918.15	1.82	0.21	1.81
3,946.00	90.20	180.20	3,147.20	-1,008.93	84.66	1,011.10	0.96	0.86	0.43
4,039.00	90.50	179.20	3,146.63	-1,101.93	85.15	1,104.07	1.12	0.32	-1.08
4,133.00	89.90	178.50	3,146.30	-1,195.91	87.04	1,198.06	0.98	-0.64	-0.74
4,226.00	90.20	177.60	3,146.22	-1,288.85	90.20	1,291.06	1.02	0.32	-0.97
4,320.00	89.70	178.00	3,146.30	-1,382.78	93.81	1,385.05	0.68	-0.53	0.43
4,414.00	89.80	178.20	3,146.71	-1,476.73	96.93	1,479.05	0.24	0.11	0.21
4,507.00	90.60	177.30	3,146.39	-1,569.66	100.58	1,572.05	1.29	0.86	-0.97
4,600.00	90.50	178.50	3,145.49	-1,662.59	103.98	1,665.04	1.29	-0.11	1.29
4,694.00	89.00	179.80	3,145.90	-1,756.57	105.38	1,759.02	2.11	-1.60	1.38
4,787.00	89.40	180.10	3,147.20	-1,849.56	105.46	1,851.97	0.54	0.43	0.32
4,880.00	89.80	179.50	3,147.85	-1,942.56	105.78	1,944.93	0.78	0.43	-0.65
4,973.00	90.10	180.00	3,147.93	-2,035.56	106.19	2,037.89	0.63	0.32	0.54
5,067.00	89.80	181.00	3,148.01	-2,129.55	105.37	2,131.82	1.11	-0.32	1.06
5,160.00	89.90	181.10	3,148.26	-2,222.54	103.67	2,224.70	0.15	0.11	0.11
5,254.00	89.90	180.40	3,148.42	-2,316.53	102.43	2,318.61	0.74	0.00	-0.74
5,348.00	90.20	180.00	3,148.34	-2,410.53	102.11	2,412.55	0.53	0.32	-0.43
5,442.00	90.50	179.60	3,147.77	-2,504.52	102.43	2,506.51	0.53	0.32	-0.43
5,536.00	90.60	179.50	3,146.86	-2,598.52	103.17	2,600.48	0.15	0.11	-0.11
5,629.00	91.10	179.00	3,145.48	-2,691.50	104.39	2,693.45	0.76	0.54	-0.54
5,724.00	91.30	178.90	3,143.49	-2,786.46	106.13	2,788.42	0.24	0.21	-0.11
5,817.00	91.00	178.20	3,141.63	-2,879.41	108.48	2,881.40	0.82	-0.32	-0.75
5,911.00	90.10	178.20	3,140.73	-2,973.36	111.44	2,975.40	0.96	-0.96	0.00
6,005.00	90.20	177.20	3,140.48	-3,067.28	115.21	3,069.39	1.07	0.11	-1.06
6,098.00	89.70	177.50	3,140.56	-3,160.18	119.51	3,162.38	0.63	-0.54	0.32
6,193.00	88.90	177.20	3,141.72	-3,255.07	123.90	3,257.36	0.90	-0.84	-0.32
6,286.00	89.90	177.30	3,142.69	-3,347.96	128.36	3,350.34	1.08	1.08	0.11
6,380.00	90.30	178.70	3,142.53	-3,441.90	131.64	3,444.34	1.55	0.43	1.49
6,474.00	90.60	178.00	3,141.79	-3,535.86	134.35	3,538.34	0.81	0.32	-0.74
6,567.00	89.80	178.50	3,141.47	-3,628.81	137.19	3,631.33	1.01	-0.86	0.54
6,662.00	89.50	179.00	3,142.05	-3,723.79	139.26	3,726.33	0.61	-0.32	0.53
6,755.00	89.40	179.60	3,142.94	-3,816.78	140.40	3,819.31	0.65	-0.11	0.65



Phoenix Technology Services
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3357.00usft (Silver Oak 3)
Site:	Stonewall 9 Feet	MD Reference:	KB @ 3357.00usft (Silver Oak 3)
Well:	#4H	North Reference:	Grid
Wellbore:	WB17/Job #1411934	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR DB

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)
6,849.00	89.50	180.20	3,143.84	-3,910.77	140.56	3,913.26	0.65	0.11	0.64
6,943.00	90.20	179.30	3,144.09	-4,004.77	140.97	4,007.22	1.21	0.74	-0.96
7,037.00	90.90	179.20	3,143.19	-4,098.75	142.20	4,101.20	0.75	0.74	-0.11
7,131.00	90.40	179.20	3,142.12	-4,192.74	143.51	4,195.18	0.53	-0.53	0.00
7,224.00	89.90	178.90	3,141.88	-4,285.73	145.06	4,288.17	0.63	-0.54	-0.32
7,317.00	90.50	178.50	3,141.55	-4,378.70	147.17	4,381.16	0.78	0.65	-0.43
7,411.00	89.80	178.90	3,141.31	-4,472.68	149.30	4,475.16	0.86	-0.74	0.43
7,505.00	89.00	179.10	3,142.29	-4,566.66	150.94	4,569.14	0.88	-0.85	0.21
7,598.00	89.50	178.20	3,143.51	-4,659.62	153.13	4,662.13	1.11	0.54	-0.97
7,700.00	89.60	178.20	3,144.31	-4,761.57	156.33	4,764.13	0.10	0.10	0.00
Last Phoenix MWD Survey:									
7,760.00	89.60	178.20	3,144.73	-4,821.54	158.22	4,824.13	0.00	0.00	0.00
Projection to Bit:									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/S (usft)	+E/W (usft)	
2,348.00	2,347.67	26.27	-15.74	Tie-on to VES Gyro Survey
2,455.00	2,454.66	26.94	-16.95	First Phoenix MWD Survey
7,700.00	3,144.31	-4,761.57	156.33	Last Phoenix MWD Survey
7,760.00	3,144.73	-4,821.54	158.22	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____