



NM OIL CONSERVATION

ARTESIA DISTRICT

NOV 16 2015

RECEIVED

30-015-43006

I Brian Brewbaker certify that I am employed by Vaughn Energy Services. That I did on the day(s) of 7/31/15 through 7/31/15 conduct or supervise the taking of a Rate Gyro survey from a depth of 0 feet to a depth of 2516 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of COG / Concho for the Stonewall 9 Fee Well # No 007H API # 30-015-43006 in Eddy County / Parish New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Vaughn Energy Services

A handwritten signature in cursive script, appearing to read "Brian Brewbaker", is written over a horizontal line.

Brian Brewbaker
Service Technician
Vaughn Energy Services



August 5, 2015

NM OIL CONSERVATION
ARTESIA DISTRICT
NOV 16 2015

RECEIVED

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

Attn: Kanicia Castillo

RE: **Stonewall 9 Fee No 007H**

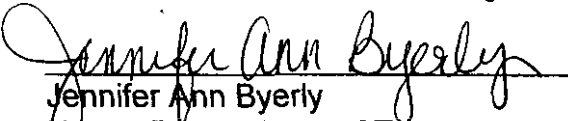
Please find enclosed a copy of the survey from 0' to 2516' ran on the above referenced well.

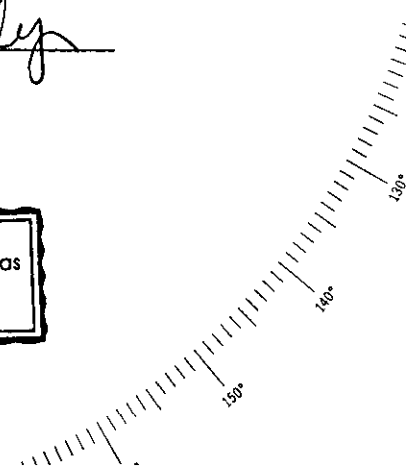
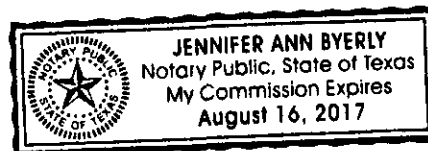
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 5 day of August,
A.D., 2015, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas

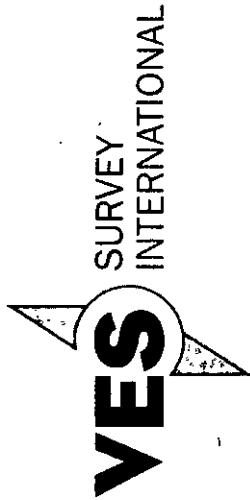




Company: COG / Concho
Well: Stonewall 9 Fee No 007H

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

VS-Azi: 0.000 Degrees
Latitude: 32.66815, Longitude: -104.38290
Grid North = True North +0.03 degs (NAD 27)



Depth Reference : RKB= 18 Ft

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: hgyro_2511-de_01.ut
Minimum Curvature Method
Report Date/Time: 8/5/2015 / 13:53

VES Survey International
Gardendale, Texas
432-563-5444

Surveyor: Brian Brewbaker
Stonewall 9 Fee No 007H / API 30-015-43006

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 16 2015

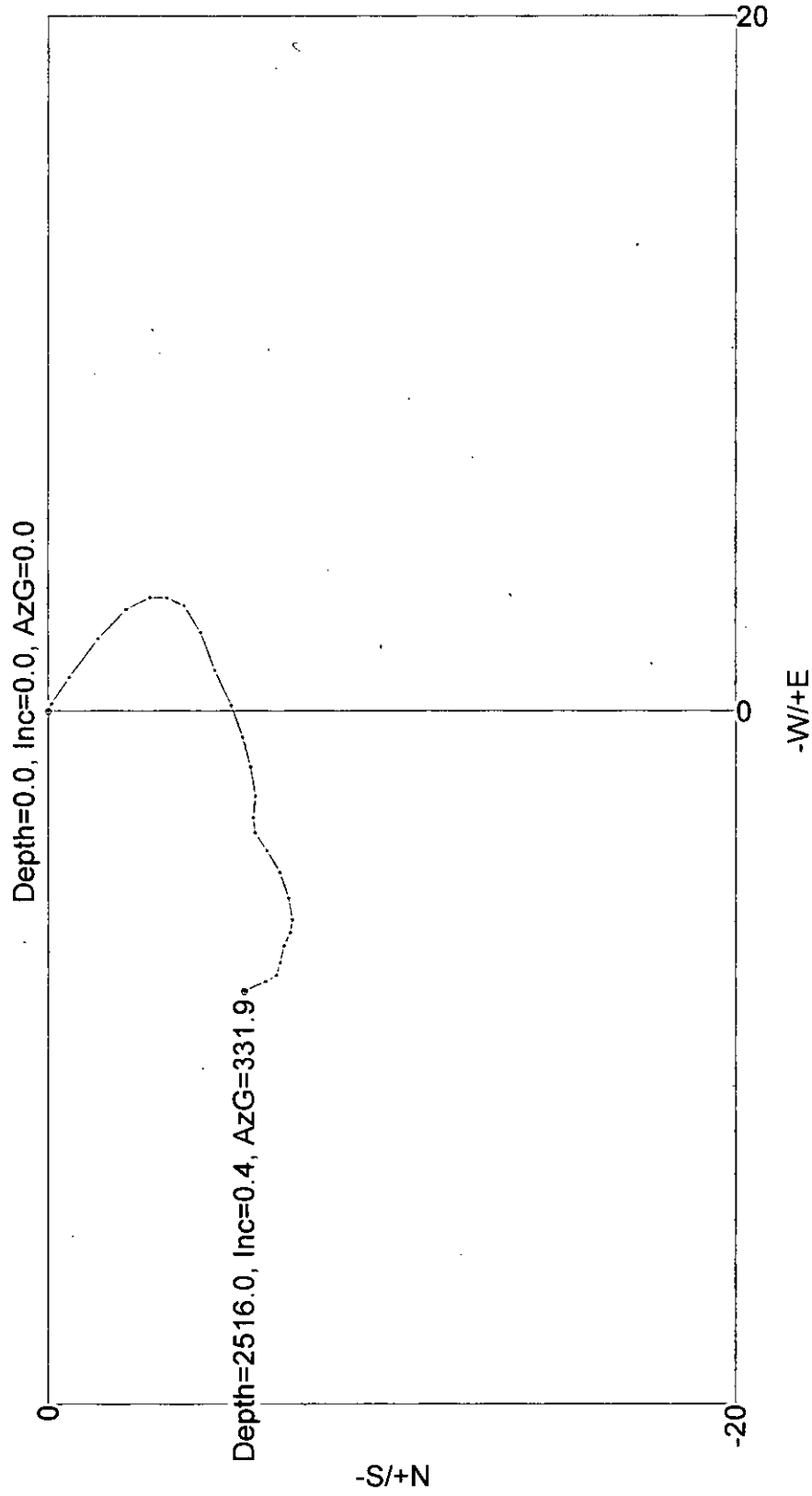
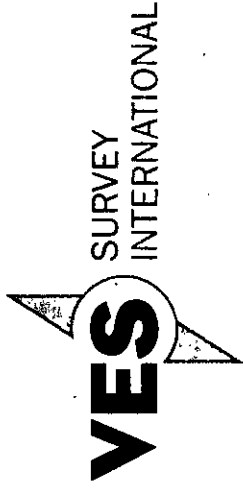
RECEIVED

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
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	****
100.000	0.255	115.362	100.000	-0.095	0.201	-0.095	0.223	115.362	0.255
200.000	0.804	127.357	199.995	-0.617	0.961	-0.617	1.142	122.703	0.557
300.000	0.782	125.493	299.985	-1.439	2.074	-1.439	2.524	124.750	0.034
400.000	0.595	145.037	399.978	-2.261	2.927	-2.261	3.699	127.678	0.297
500.000	0.313	171.750	499.975	-2.957	3.264	-2.957	4.404	132.168	0.346
600.000	0.244	191.497	599.974	-3.435	3.261	-3.435	4.736	136.488	0.117
700.000	0.409	211.390	699.972	-3.948	3.033	-3.948	4.979	142.473	0.198
800.000	0.701	253.288	799.968	-4.429	2.280	-4.429	4.973	152.965	0.482
900.000	0.636	244.781	899.961	-4.842	1.172	-4.842	4.982	166.392	0.119
1000.000	0.652	245.193	999.955	-5.317	0.154	-5.317	5.319	178.344	0.017
1100.000	0.464	257.637	1099.950	-5.642	-0.758	-5.642	5.693	187.651	0.223
1200.000	0.545	252.061	1199.946	-5.875	-1.606	-5.875	6.091	195.288	0.095
1300.000	0.463	270.877	1299.942	-6.016	-2.463	-6.016	6.500	202.266	0.184
1400.000	0.237	287.068	1399.941	-5.949	-3.065	-5.949	6.692	207.258	0.245
1500.000	0.310	244.285	1499.939	-6.006	-3.507	-6.006	6.954	210.280	0.211
1600.000	0.396	230.556	1599.938	-6.343	-4.017	-6.343	7.508	212.350	0.120
1700.000	0.463	245.814	1699.935	-6.728	-4.653	-6.728	8.180	214.667	0.132
1800.000	0.439	257.895	1799.932	-6.973	-5.396	-6.973	8.817	217.731	0.098

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
1900.000	0.273	263.747	1899.930	-7.080	-6.007	-7.080	9.285	220.314	0.170
2000.000	0.187	301.954	1999.929	-7.019	-6.382	-7.019	9.487	222.279	0.171
2100.000	0.288	291.750	2099.928	-6.840	-6.754	-6.840	9.612	224.640	0.109
2200.000	0.300	273.999	2199.927	-6.728	-7.249	-6.728	9.890	227.132	0.091
2300.000	0.148	310.901	2299.926	-6.625	-7.608	-6.625	10.088	228.949	0.202
2400.000	0.298	342.548	2399.925	-6.293	-7.783	-6.293	10.009	231.046	0.188
2516.000	0.365	331.896	2515.923	-5.679	-8.048	-5.679	9.850	234.789	0.078



VES Survey International
Gardendale, Texas
432-563-5444
Surveyor: Brian Brewbaker
Stonewall 9 Fee No 007H / API 30-015-43006





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

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 16 2015

RECEIVED

August 12, 2015

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

RE: Stonewall 9 Fee 007H
150' FSL & 1650' FEL
Sec. 9, T19S, R26E
Eddy County, New Mexico

Dear Sir,

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

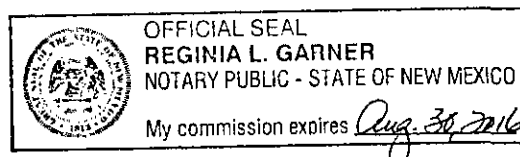
Very truly yours,

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 12th day of August, 2015.

Notary Public



STONEWALL 9 FEE 007H

Date	Depth	Deviation	Direction	TVD
7/29/2015	75	0.50	0.00	0.00
7/29/2015	260	0.50	0.00	0.00
7/29/2015	503	0.60	0.00	0.00
7/29/2015	746	0.70	0.00	0.00
7/29/2015	936	1.00	0.00	0.00
7/29/2015	1157	0.40	0.00	0.00
7/31/2015	1436	0.90	0.00	0.00
7/31/2015	1912	0.80	0.00	0.00
7/31/2015	2358	0.60	0.00	0.00
8/1/2015	2549	0.40	359.70	0.00
8/1/2015	2581	2.00	344.60	0.00
8/1/2015	2613	4.40	346.70	0.00
8/1/2015	2644	7.00	350.10	0.00
8/1/2015	2675	9.50	353.00	0.00
8/1/2015	2707	12.00	353.20	0.00
8/1/2015	2770	16.60	353.00	0.00
8/1/2015	2801	19.30	353.70	0.00
8/1/2015	2833	22.00	354.00	0.00
8/1/2015	2865	24.40	355.00	0.00
8/1/2015	2896	27.30	356.00	0.00
8/1/2015	2927	30.90	356.80	0.00
8/1/2015	2959	34.50	357.40	0.00
8/1/2015	2990	37.20	357.40	0.00
8/1/2015	3022	40.30	358.00	0.00
8/1/2015	3053	44.00	358.20	0.00
8/2/2015	3085	47.10	357.30	3033.00
8/2/2015	3117	50.40	356.60	3054.00
8/2/2015	3148	54.70	355.90	3072.00
8/2/2015	3180	58.30	355.70	3090.00
8/2/2015	3211	61.90	355.70	3106.00
8/2/2015	3243	65.30	356.00	3120.00
8/2/2015	3274	68.70	356.80	3132.00
8/2/2015	3306	72.00	356.60	3143.00
8/5/2015	3239	65.50	357.20	0.00
8/5/2015	3303	74.90	356.60	0.00
8/5/2015	3335	80.40	356.60	0.00
8/5/2015	3366	84.30	356.80	0.00
8/5/2015	3398	86.20	357.40	0.00
8/5/2015	3430	87.30	357.70	0.00
8/5/2015	3525	91.20	358.50	0.00
8/5/2015	3619	90.60	358.00	0.00
8/5/2015	3713	90.20	357.10	0.00

Date	Depth	Deviation	Direction	TVD
8/5/2015	3807	90.90	358.60	0.00
8/5/2015	3902	90.50	357.30	0.00
8/6/2015	3996	90.40	358.90	0.00
8/6/2015	4090	90.40	359.20	0.00
8/6/2015	4185	91.30	360.00	0.00
8/6/2015	4375	91.00	359.40	0.00
8/6/2015	4469	91.10	358.20	0.00
8/6/2015	4564	92.30	359.00	0.00
8/6/2015	4658	92.40	358.80	0.00
8/6/2015	4753	92.00	357.70	0.00
8/6/2015	4847	91.90	357.40	0.00
8/6/2015	4942	91.60	357.50	0.00
8/7/2015	5037	92.00	358.60	0.00
8/7/2015	5219	92.00	358.70	0.00
8/7/2015	5313	91.60	358.70	0.00
8/7/2015	5407	91.30	358.60	0.00
8/7/2015	5501	91.10	358.80	0.00
8/7/2015	5595	91.00	359.10	0.00
8/8/2015	5691	91.10	358.90	3119.00
8/8/2015	5785	90.50	358.80	3118.00
8/8/2015	5881	90.00	359.00	0.00
8/8/2015	5975	90.10	358.10	0.00
8/8/2015	6069	90.70	358.20	0.00
8/8/2015	6164	91.20	358.00	0.00
8/8/2015	6259	90.80	358.00	0.00
8/8/2015	6353	90.40	358.20	0.00
8/9/2015	6448	92.40	357.90	3110.00
8/9/2015	6542	91.80	357.70	3107.00
8/9/2015	6637	91.60	357.50	3104.00
8/9/2015	6731	91.10	356.90	0.00
8/9/2015	6826	91.40	358.50	0.00
8/9/2015	6921	90.70	358.40	0.00
8/9/2015	7015	92.00	359.70	0.00
8/9/2015	7110	91.90	359.70	0.00
8/9/2015	7204	91.50	359.80	0.00
8/10/2015	7300	91.50	358.80	3087.00
8/10/2015	7394	91.50	358.80	3087.00
8/10/2015	7488	92.30	357.60	0.00
8/10/2015	7583	92.00	357.60	0.00
8/10/2015	7677	91.60	357.40	0.00
8/10/2015	7717	91.10	357.70	0.00

EOF



NM OIL CONSERVATION
ARTESIA DISTRICT
NOV 16 2015

RECEIVED

COG Operating LLC

Eddy County, NM (NAD27 NME)

Stonewall 9 Fee

#7H

ST01 / Job #1513996

Design: Surveys (Silveraok 3)

Standard Survey Report

11 August, 2015





Phoenix Technology Services LP
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3364.00usft (Silver Oak 3)
Site:	Stonewall 9 Fee	MD Reference:	KB @ 3364.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	ST01 / Job #1513996	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silveraok 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	Stonewall 9 Fee		
Site Position:		Northing:	611,835.50 usft
From:	Map	Easting:	482,702.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 40' 55.28160 N
		Longitude:	104° 23' 22.39586 W
		Grid Convergence:	-0.03 °

Well	#7H		
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' 5.33443 N
		Longitude:	104° 22' 58.45239 W
		Ground Level:	3,346.00 usft

Wellbore	ST01 / Job #1513996		
Magnetics	Model Name	Sample Date	Declination
			(°)
	HDGM	8/5/2015	7.60
			Dip Angle
			(°)
			60.53
			Field Strength
			(nT)
			48,422

Design	Surveys (Silveraok 3)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	3,022.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			13.63

Survey Program	Date 8/11/2015		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	2,516.00	VES Gyro Surveys (OH / Job #1513996)	NS-GYRO-MS
2,549.00	3,022.00	Phoenix MWD Surveys (OH / Job #151399)	PHX+MWD+HDGM
3,022.00	7,777.00	Phoenix MWD Survey (ST01 / Job #15139)	PHX+MWD+HDGM
			Description
			North sensing gyrocompassing m/s
			PHX+MWD+HDGM
			PHX+MWD+HDGM

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	0.26	115.36	100.00	-0.10	0.20	-0.05	0.26	0.26	0.00
200.00	0.80	127.36	200.00	-0.62	0.96	-0.37	0.56	0.55	12.00
300.00	0.78	125.49	299.99	-1.44	2.07	-0.91	0.03	-0.02	-1.86
400.00	0.60	145.04	399.98	-2.26	2.93	-1.51	0.30	-0.19	19.54
500.00	0.31	171.75	499.98	-2.96	3.26	-2.10	0.35	-0.28	26.71
600.00	0.24	191.50	599.97	-3.43	3.26	-2.57	0.12	-0.07	19.75
700.00	0.41	211.39	699.97	-3.95	3.03	-3.12	0.20	0.17	19.89
800.00	0.70	253.29	799.97	-4.43	2.26	-3.77	0.48	0.29	41.90



Phoenix Technology Services LP
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3364.00usft (Silver Oak 3)
Site:	Stonewall 9 Fee	MD Reference:	KB @ 3364.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	ST01 / Job #1513996	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silveraok 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)	
900.00	0.64	244.78	899.96	-4.84	1.17	-4.43	0.12	-0.07	-8.51	
1,000.00	0.65	245.19	999.95	-5.32	0.15	-5.13	0.02	0.02	0.41	
1,100.00	0.46	257.64	1,099.95	-5.64	-0.76	-5.66	0.22	-0.19	12.44	
1,200.00	0.55	252.06	1,199.95	-5.87	-1.61	-6.09	0.09	0.08	-5.58	
1,300.00	0.46	270.88	1,299.94	-6.02	-2.46	-6.43	0.18	-0.08	18.82	
1,400.00	0.24	287.07	1,399.94	-5.95	-3.07	-6.50	0.24	-0.23	16.19	
1,500.00	0.31	244.29	1,499.94	-6.00	-3.51	-6.66	0.21	0.07	-42.78	
1,600.00	0.40	230.56	1,599.94	-6.34	-4.02	-7.11	0.12	0.09	-13.73	
1,700.00	0.46	245.81	1,699.93	-6.73	-4.65	-7.63	0.13	0.07	15.26	
1,800.00	0.44	257.90	1,799.93	-6.97	-5.40	-8.05	0.10	-0.02	12.08	
1,900.00	0.27	263.75	1,899.93	-7.08	-6.01	-8.30	0.17	-0.17	5.85	
2,000.00	0.19	301.95	1,999.93	-7.02	-6.38	-8.33	0.17	-0.09	38.21	
2,100.00	0.29	291.75	2,099.93	-6.84	-6.75	-8.24	0.11	0.10	-10.20	
2,200.00	0.30	274.00	2,199.93	-6.73	-7.25	-8.25	0.09	0.01	-17.75	
2,300.00	0.15	310.90	2,299.93	-6.63	-7.61	-8.23	0.20	-0.15	36.90	
2,400.00	0.30	342.55	2,399.93	-6.29	-7.78	-7.95	0.19	0.15	31.65	
2,516.00	0.37	331.90	2,515.92	-5.68	-8.05	-7.42	0.08	0.06	-9.18	
2,549.00	0.40	359.70	2,548.92	-5.47	-8.10	-7.23	0.57	0.11	84.25	
2,581.00	2.00	344.60	2,580.91	-4.82	-8.25	-6.63	5.05	5.00	-47.19	
2,613.00	4.40	346.70	2,612.86	-3.09	-8.68	-5.05	7.51	7.50	6.56	
2,644.00	7.00	350.10	2,643.71	-0.07	-9.28	-2.25	8.45	8.39	10.97	
2,675.00	9.50	353.00	2,674.38	4.33	-9.91	1.87	8.17	8.06	9.35	
2,707.00	12.00	353.20	2,705.82	10.26	-10.63	7.46	7.81	7.81	0.63	
2,738.00	14.40	353.70	2,736.00	17.29	-11.43	14.11	7.75	7.74	1.61	
2,770.00	16.60	353.00	2,766.83	25.78	-12.43	22.13	6.90	6.88	-2.19	
2,801.00	19.30	353.70	2,796.32	35.27	-13.53	31.09	8.74	8.71	2.26	
2,833.00	22.00	354.00	2,826.26	46.49	-14.74	41.71	8.44	8.44	0.94	
2,865.00	24.40	355.00	2,855.67	59.04	-15.94	53.62	7.60	7.50	3.13	
2,896.00	27.30	356.00	2,883.57	72.51	-16.99	66.46	9.46	9.35	3.23	
2,927.00	30.90	356.80	2,910.65	87.56	-17.93	80.86	11.68	11.61	2.58	
2,959.00	34.50	357.40	2,937.57	104.82	-18.80	97.44	11.30	11.25	1.88	
2,990.00	37.20	357.40	2,962.70	122.95	-19.63	114.87	8.71	8.71	0.00	
3,022.00	40.30	358.00	2,987.65	142.96	-20.43	134.12	9.76	9.69	1.88	
Tie-on to 3022' MD										
3,053.00	40.70	357.90	3,011.23	163.08	-21.15	153.51	1.31	1.29	-0.32	
3,067.00	41.00	357.80	3,021.82	172.24	-21.49	162.32	2.19	2.14	-0.71	
3,099.00	41.80	357.70	3,045.82	193.38	-22.32	182.67	2.51	2.50	-0.31	
3,129.00	45.50	357.40	3,067.52	214.07	-23.21	202.57	12.35	12.33	-1.00	
3,160.00	50.80	357.40	3,088.20	237.13	-24.26	224.73	17.10	17.10	0.00	
3,192.00	56.40	357.40	3,107.18	262.85	-25.42	249.45	17.50	17.50	0.00	
3,223.00	62.30	357.50	3,122.98	289.48	-26.61	275.05	19.03	19.03	0.32	
3,239.00	65.20	357.20	3,130.05	303.81	-27.27	288.83	18.20	18.13	-1.88	
3,271.00	70.20	356.80	3,142.19	333.37	-28.82	317.19	15.67	15.63	-1.25	



Phoenix Technology Services LP
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3364.00usft (Silver Oak 3)
Site:	Stonewall 9 Fee	MD Reference:	KB @ 3364.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	ST01 / Job #1513996	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)
3,303.00	74.90	356.60	3,151.78	363.83	-30.58	346.38	14.70	14.69	-0.63
3,335.00	80.40	356.60	3,158.63	395.03	-32.43	376.26	17.19	17.19	0.00
3,366.00	84.30	356.80	3,162.75	425.69	-34.20	405.65	12.60	12.58	0.65
3,398.00	86.20	357.40	3,165.40	457.54	-35.82	436.22	6.22	5.94	1.88
3,430.00	87.30	357.70	3,167.21	489.46	-37.18	466.91	3.56	3.44	0.94
3,525.00	91.20	358.50	3,168.46	584.38	-40.33	558.42	4.19	4.11	0.84
3,619.00	90.60	358.00	3,166.98	678.32	-43.20	649.04	0.83	-0.64	-0.53
3,713.00	90.20	357.10	3,166.33	772.24	-47.22	739.36	1.05	-0.43	-0.96
3,807.00	90.90	358.60	3,165.42	866.16	-50.74	829.81	1.76	0.74	1.60
3,902.00	90.50	357.30	3,164.26	961.09	-54.14	921.27	1.43	-0.42	-1.37
3,996.00	90.40	358.90	3,163.52	1,055.03	-57.26	1,011.83	1.71	-0.11	1.70
4,090.00	90.40	359.20	3,162.87	1,149.02	-58.82	1,102.80	0.32	0.00	0.32
4,185.00	91.30	360.00	3,161.46	1,244.00	-59.48	1,194.95	1.27	0.95	0.84
4,280.00	91.20	359.50	3,159.39	1,338.98	-59.90	1,287.16	0.54	-0.11	-0.53
4,375.00	91.00	359.40	3,157.56	1,433.96	-60.81	1,379.25	0.24	-0.21	-0.11
4,469.00	91.10	358.20	3,155.84	1,527.92	-62.78	1,470.10	1.28	0.11	-1.28
4,564.00	92.30	359.00	3,153.02	1,622.85	-65.10	1,561.80	1.52	1.26	0.84
4,658.00	92.40	358.80	3,149.17	1,716.75	-66.90	1,652.64	0.24	0.11	-0.21
4,753.00	92.00	357.70	3,145.52	1,811.63	-69.80	1,744.17	1.23	-0.42	-1.16
4,847.00	91.90	357.40	3,142.32	1,905.49	-73.81	1,834.44	0.34	-0.11	-0.32
4,942.00	91.60	357.50	3,139.42	2,000.36	-78.04	1,925.63	0.33	-0.32	0.11
5,037.00	92.00	358.60	3,136.44	2,095.25	-81.27	2,017.09	1.23	0.42	1.16
5,132.00	91.70	358.20	3,133.37	2,190.17	-83.92	2,108.71	0.53	-0.32	-0.42
5,219.00	92.00	358.70	3,130.56	2,277.09	-86.27	2,192.63	0.67	0.34	0.57
5,313.00	91.60	358.70	3,127.61	2,371.02	-88.40	2,283.41	0.43	-0.43	0.00
5,407.00	91.30	358.60	3,125.23	2,464.96	-90.62	2,374.19	0.34	-0.32	-0.11
5,501.00	91.10	358.80	3,123.26	2,558.92	-92.75	2,464.99	0.30	-0.21	0.21
5,595.00	91.00	359.10	3,121.54	2,652.88	-94.47	2,555.91	0.34	-0.11	0.32
5,691.00	91.10	358.90	3,119.78	2,748.85	-96.15	2,648.78	0.23	0.10	-0.21
5,785.00	90.50	358.80	3,118.47	2,842.83	-98.03	2,739.66	0.65	-0.64	-0.11
5,881.00	90.00	359.00	3,118.05	2,938.81	-99.88	2,832.51	0.56	-0.52	0.21
5,975.00	90.10	358.10	3,117.97	3,032.78	-102.26	2,923.27	0.96	0.11	-0.96
6,069.00	90.70	358.20	3,117.31	3,126.72	-105.29	3,013.86	0.65	0.64	0.11
6,164.00	91.20	358.00	3,115.73	3,221.66	-108.44	3,105.37	0.57	0.53	-0.21
6,259.00	90.80	358.00	3,114.08	3,316.59	-111.75	3,196.85	0.42	-0.42	0.00
6,353.00	90.40	358.20	3,113.09	3,410.53	-114.87	3,287.41	0.48	-0.43	0.21
6,448.00	92.40	357.90	3,110.77	3,505.44	-118.10	3,378.89	2.13	2.11	-0.32
6,542.00	91.80	357.70	3,107.33	3,599.31	-121.71	3,469.26	0.67	-0.64	-0.21
6,637.00	91.60	357.50	3,104.51	3,694.18	-125.68	3,560.53	0.30	-0.21	-0.21
6,731.00	91.10	356.90	3,102.29	3,788.04	-130.27	3,650.66	0.83	-0.53	-0.64
6,826.00	91.40	358.50	3,100.22	3,882.94	-134.09	3,741.99	1.71	0.32	1.68
6,921.00	90.70	358.40	3,098.48	3,977.89	-136.66	3,833.66	0.74	-0.74	-0.11
7,015.00	92.00	359.70	3,096.27	4,071.85	-138.21	3,924.60	1.96	1.38	1.38
7,110.00	91.90	359.70	3,093.03	4,166.79	-138.71	4,016.76	0.11	-0.11	0.00



Phoenix Technology Services LP
Survey Report



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Site:	Stonewall 9 Fee	MD Reference:	KB @ 3364.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	ST01 / Job #1513996	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silveraok 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)
7,204.00	91.50	359.80	3,090.24	4,260.75	-139.12	4,107.97	0.44	-0.43	0.11
7,300.00	91.50	358.80	3,087.73	4,356.71	-140.29	4,200.95	1.04	0.00	-1.04
7,394.00	91.20	357.70	3,085.52	4,450.63	-143.16	4,291.56	1.21	-0.32	-1.17
7,488.00	92.30	357.60	3,082.65	4,544.51	-147.02	4,381.88	1.18	1.17	-0.11
7,583.00	92.00	357.60	3,079.08	4,639.36	-150.99	4,473.12	0.32	-0.32	0.00
7,677.00	91.60	357.40	3,076.13	4,733.22	-155.09	4,563.38	0.48	-0.43	-0.21
7,717.00	91.10	357.70	3,075.19	4,773.18	-156.80	4,601.80	1.46	-1.25	0.75
Last Phoenix MWD Survey									
7,777.00	91.10	357.70	3,074.04	4,833.12	-159.21	4,659.49	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)	
3,022.00	2,987.65	142.96	-20.43	Tie-on to 3022' MD
7,717.00	3,075.19	4,773.18	-156.80	Last Phoenix MWD Survey
7,777.00	3,074.04	4,833.12	-159.21	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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