

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 13 2015



SURVEY
INTERNATIONAL

RECEIVED

August 5, 2014

15-42500

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

Attn: Kanicia Castillo

RE: Noose Federal Com No. 010H

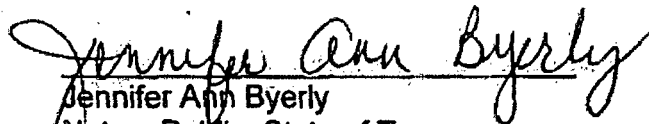
Please find enclosed a copy of the survey from 0.00' to 2292.00' ran on the
above referenced well.

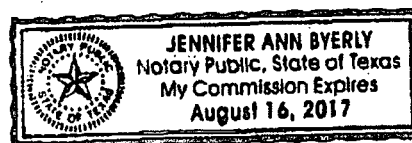
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 5 day of August
A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas



Company: COG Operating, LLC (Concho)

Lease/Well: Noose Federal Com/No. 010H



Rig Name: Silveroak#3

State/County: New Mexico/Eddy

Latitude: 32.61, Longitude: -104.45

GRID North is 0.07 Degrees West of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB- 17 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 8/5/2014 / 11:18

VES Survey International

West Texas

(432) 563-5444

Surveyor: Jordan Shelleby

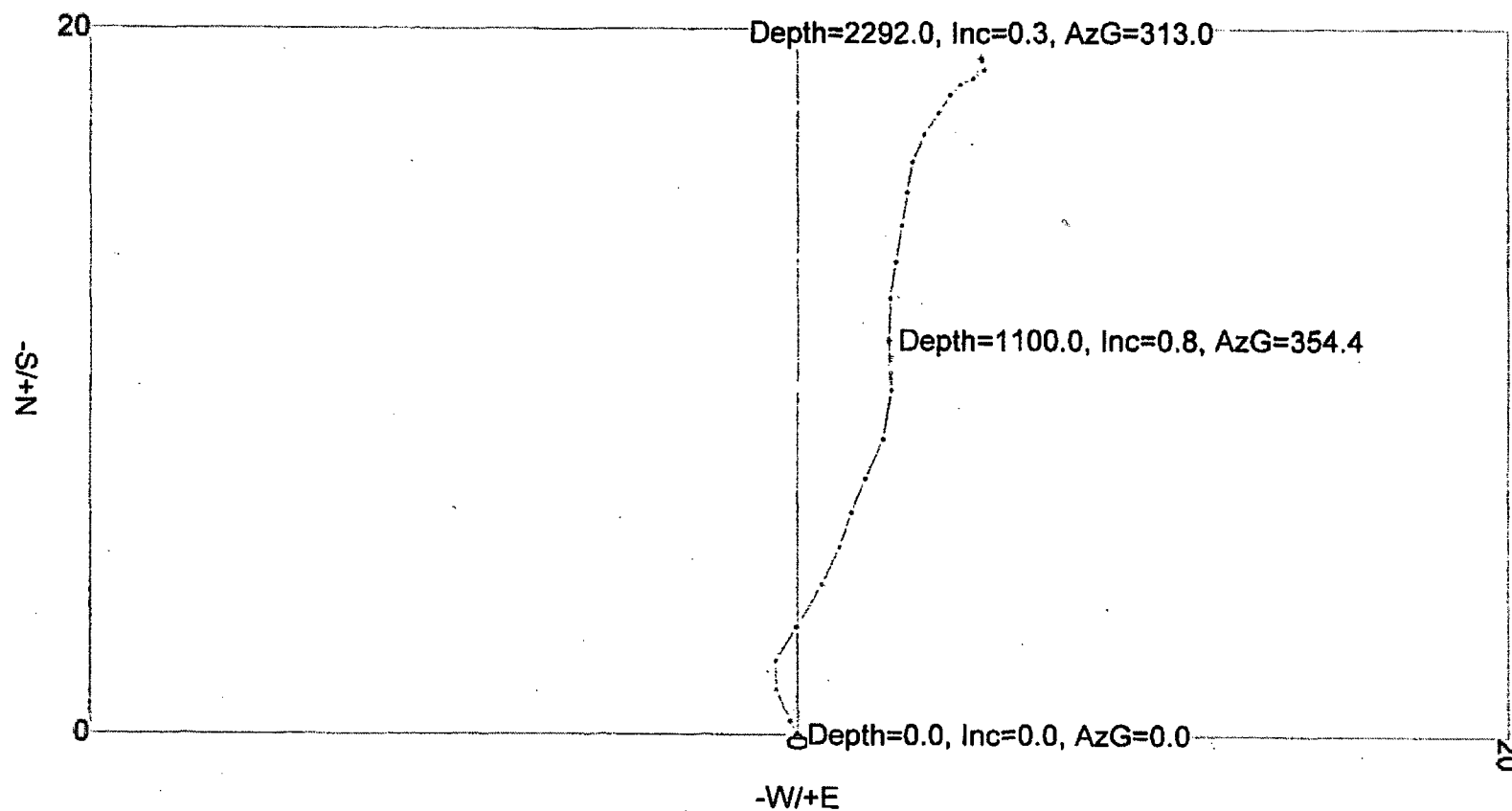
Noose Federal Com No. 010H / API 30-015-42500

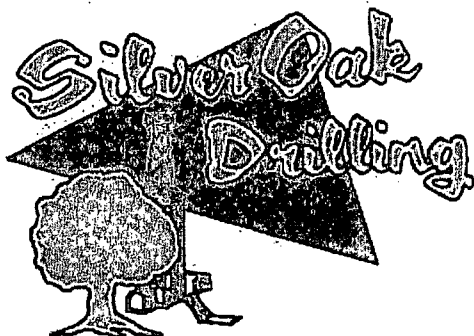
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.55	332.03	100.00	0.42	-0.22	0.42	0.48	332.03	0.55
200.00	0.55	342.27	199.99	1.30	-0.59	1.30	1.43	335.44	0.10
300.00	0.43	17.85	299.99	2.11	-0.62	2.11	2.20	343.59	0.32
400.00	0.86	38.15	399.98	3.06	-0.04	3.06	3.06	359.20	0.48
500.00	0.77	24.61	499.97	4.26	0.70	4.26	4.32	9.34	0.21
600.00	0.58	22.24	599.97	5.35	1.17	5.35	5.48	12.39	0.19
700.00	0.60	15.33	699.96	6.33	1.51	6.33	6.50	13.39	0.07
800.00	0.61	29.95	799.96	7.30	1.91	7.30	7.64	14.69	0.16
900.00	0.80	18.89	899.95	8.42	2.41	8.42	8.76	15.94	0.23
1000.00	0.82	359.70	999.94	9.80	2.63	9.80	10.15	15.02	0.27
1100.00	0.79	354.44	1099.93	11.20	2.56	11.20	11.49	12.87	0.08
1200.00	0.61	10.32	1199.92	12.41	2.59	12.41	12.68	11.78	0.26
1300.00	0.59	8.44	1299.92	13.44	2.76	13.44	13.72	11.60	0.03
1400.00	0.69	9.67	1399.91	14.46	2.92	14.46	14.75	11.42	0.01
1500.00	0.47	9.42	1499.91	15.37	3.07	15.37	15.68	11.31	0.12
1600.00	0.56	10.59	1599.90	16.25	3.23	16.25	16.57	11.24	0.08
1700.00	0.45	37.26	1699.90	17.04	3.56	17.04	17.41	11.79	0.25
1800.00	0.40	29.33	1799.90	17.66	3.96	17.66	18.10	12.65	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	0.30	36.36	1899.89	18.18	4.29	18.18	18.68	13.29	0.11
2000.00	0.19	62.51	1999.89	18.46	4.59	18.46	19.03	13.97	0.15
2100.00	0.27	65.54	2099.89	18.64	4.96	18.64	19.29	14.89	0.08
2200.00	0.20	34.70	2199.89	18.87	5.28	18.87	19.59	15.58	0.14
2292.00	0.29	313.03	2291.89	19.16	5.18	19.16	19.85	15.13	0.36



VES Survey International
West Texas
(432) 563-5444
Surveyor: Jordan Shelleby
Noose Federal Com No. 010H / API 30-015-42500





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

August 4, 2014

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

RE: Noose Federal Com #10H
170' FSL & 2550' FEL
Sec. 35, T19S, R25E
Eddy County, New Mexico

Dear Sir,

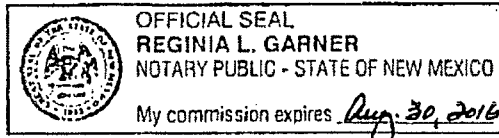
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 4th day of August, 2014.

Notary Public

NOOSE FEDERAL COM 10H

Date	Depth	Deviation	Direction	TVD	Horiz
7/22/2014	173	0.60	0.00	0.00	0.00
7/23/2014	383	1.10	0.00	0.00	0.00
7/23/2014	536	0.60	0.00	0.00	0.00
7/23/2014	684	0.60	0.00	0.00	0.00
7/23/2014	934	0.70	0.00	0.00	0.00
7/25/2014	1399	0.80	0.00	0.00	0.00
7/25/2014	1867	0.60	0.00	0.00	0.00
7/26/2014	2314	0.90	0.00	0.00	0.00
7/26/2014	2339	0.30	320.00	0.00	0.00
7/26/2014	2370	0.40	337.00	0.00	0.00
7/26/2014	2401	0.30	341.20	0.00	0.00
7/26/2014	2433	2.20	23.40	0.00	0.00
7/27/2014	2526	12.60	4.10	0.00	0.00
7/27/2014	2557	15.00	2.20	0.00	0.00
7/27/2014	2588	18.70	1.80	0.00	0.00
7/27/2014	2620	22.50	2.10	0.00	0.00
7/27/2014	2651	25.40	1.80	0.00	0.00
7/27/2014	2682	28.10	1.00	0.00	0.00
7/27/2014	2714	31.30	359.40	0.00	0.00
7/27/2014	2745	34.10	357.30	0.00	0.00
7/27/2014	2777	37.10	356.00	0.00	0.00
7/27/2014	2808	40.80	355.60	0.00	0.00
7/27/2014	2840	44.00	356.50	0.00	0.00
7/27/2014	2871	46.30	357.40	0.00	0.00
7/27/2014	2995	58.10	358.60	0.00	0.00
7/27/2014	3026	60.50	0.30	0.00	0.00
7/27/2014	3057	62.70	1.40	0.00	0.00
7/27/2014	3089	65.30	1.50	0.00	0.00
7/27/2014	3119	67.70	2.20	0.00	0.00
7/27/2014	3150	70.90	1.80	0.00	0.00
7/28/2014	3215	79.60	0.60	0.00	0.00
7/28/2014	3246	82.60	0.70	0.00	0.00
7/28/2014	3277	85.10	1.10	0.00	0.00
7/28/2014	3327	89.60	1.30	0.00	0.00
7/28/2014	3421	90.10	1.50	0.00	0.00
7/28/2014	3515	90.20	1.70	0.00	0.00
7/28/2014	3608	90.90	0.40	0.00	0.00
7/28/2014	3701	91.20	359.40	0.00	0.00
7/29/2014	3890	90.90	358.80	0.00	0.00
7/29/2014	3984	90.20	358.50	0.00	0.00
7/29/2014	4078	90.20	359.10	0.00	0.00
7/29/2014	4172	90.50	359.10	0.00	0.00
7/29/2014	4265	90.60	359.80	0.00	0.00

Date	Depth	Deviation	Direction	TVD	Horiz
7/29/2014	4358	90.90	359.80	0.00	0.00
7/29/2014	4452	91.30	359.60	0.00	0.00
7/29/2014	4545	91.50	359.60	0.00	0.00
7/29/2014	4639	90.90	0.40	0.00	0.00
7/29/2014	4733	90.50	1.00	0.00	0.00
7/29/2014	4826	90.20	0.90	0.00	0.00
7/29/2014	4920	89.90	1.00	0.00	0.00
7/29/2014	5013	89.70	0.40	0.00	0.00
7/29/2014	5107	89.20	360.00	0.00	0.00
7/30/2014	5201	89.80	0.10	0.00	0.00
7/30/2014	5295	90.40	0.30	0.00	0.00
7/30/2014	5389	91.10	359.50	0.00	0.00
7/30/2014	5483	91.80	359.60	0.00	0.00
7/30/2014	5576	90.60	359.90	0.00	0.00
7/30/2014	5669	91.10	0.60	0.00	0.00
7/30/2014	5763	91.30	0.80	0.00	0.00
7/30/2014	5856	91.90	1.00	0.00	0.00
7/30/2014	5950	91.80	1.10	0.00	0.00
7/30/2014	6044	90.30	0.40	0.00	0.00
7/30/2014	6138	90.10	360.00	0.00	0.00
7/31/2014	6324	88.80	359.10	0.00	0.00
7/31/2014	6419	89.10	358.40	0.00	0.00
7/31/2014	6512	89.40	358.90	0.00	0.00
7/31/2014	6605	90.10	359.40	0.00	0.00
7/31/2014	6699	91.10	359.70	0.00	0.00
7/31/2014	6792	91.20	1.20	0.00	0.00
7/31/2014	6886	91.20	1.00	0.00	0.00
7/31/2014	6980	90.70	1.10	0.00	0.00
7/31/2014	7074	90.20	1.60	0.00	0.00
7/31/2014	7167	89.60	1.50	0.00	0.00
8/1/2014	7260	89.80	1.30	0.00	0.00
8/1/2014	7354	90.10	1.30	0.00	0.00

EOF



COG Operating LLC

Eddy County, NM (NAD27 NME)

Noose Federal Com

#10H

WB1/Job #1411086

Design: Surveys (Silver Oak 3)

Standard Survey Report

01 August, 2014





Phoenix Technology Services
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #10H
Project:	Eddy County, NM (NAD27,NME)	TVD Reference:	KB @ 3481.00usft (Silver Oak 3)
Site:	Noose Federal Com	MD Reference:	KB @ 3481.00usft (Silver Oak 3)
Well:	#10H	North Reference:	Grid
Wellbore:	WB1/Job #1411086	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	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:		Noose Federal Com			
Site Position:		Northing:	585,657.00 usft	Latitude:	32° 36' 36.04153 N
From:	Map	Easting:	460,945.50 usft	Longitude:	104° 27' 36.59241 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.07 °

Well	#10H					
Well Position	+N-S	0.00 usft	Northing:	585,682.00 usft	Latitude:	32° 36' 36.30852 N
	+E-W	0.00 usft	Easting:	462,642.10 usft	Longitude:	104° 27' 16.75756 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,463.00 usft	

Wellbore		WB1/Job #1411086			
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(μ)	($^\circ$)	(nT)
	IGRF2010_14	07/25/14	7.64	60.32	48,440

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)	($^{\circ}$)	
	0.00	0.00	0.00	0.17	

Survey Program		Date		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	2,292.00	VES Gyro Surveys (WB1/Job #1411086)	PHX+MWD+IGRF	PHX+MWD+IGRF v3:standard declination
2,339.00	7,498.00	Phoenix MWD Surveys (WB1/Job #141108)	PHX+MWD+IGRF	PHX+MWD+IGRF v3:standard declination

Measured Depth (usft)	Inclination ($^\circ$)	Azimuth ($^\circ$)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate ($^\circ$ /100usft)	Build Rate ($^\circ$ /100usft)	Turn Rate ($^\circ$ /100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.55	332.03	100.00	0.42	-0.23	0.42	0.55	0.55	0.00
200.00	0.55	342.27	199.99	1.30	-0.60	1.30	0.10	0.00	10.24
300.00	0.43	17.85	299.99	2.12	-0.63	2.12	0.32	-0.12	35.58
400.00	0.86	38.15	399.98	3.07	-0.05	3.07	0.48	0.43	20.30
500.00	0.77	24.61	499.97	4.27	0.89	4.27	0.21	-0.09	-13.54
600.00	0.58	22.24	599.97	5.35	1.17	5.35	0.19	-0.19	-2.37
700.00	0.60	15.33	699.96	6.32	1.50	6.32	0.07	0.02	-6.91
800.00	0.61	29.95	799.96	7.29	1.90	7.29	0.15	0.01	14.62
900.00	0.80	18.89	899.95	8.41	2.39	8.42	0.23	0.19	-11.06



Phoenix Technology Services
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #10H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3481.00usft (Silver Oak 3)
Site:	Noose Federal Com	MD Reference:	KB @ 3481.00usft (Silver Oak 3)
Well:	#10H	North Reference:	Grid
Wellbore:	WB1/Job #1411086	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	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)
1,000.00	0.82	359.70	999.94	9.78	2.61	9.79	0.27	0.02	-19.19
1,100.00	0.79	354.44	1,099.93	11.19	2.54	11.19	0.08	-0.03	-5.26
1,200.00	0.61	10.32	1,199.92	12.40	2.57	12.40	0.26	-0.18	15.88
1,300.00	0.59	8.44	1,299.92	13.43	2.74	13.44	0.03	-0.02	-1.88
1,400.00	0.59	9.67	1,399.91	14.45	2.91	14.45	0.01	0.00	1.23
1,500.00	0.47	9.42	1,499.91	15.36	3.06	15.37	0.12	-0.12	-0.25
1,600.00	0.56	10.59	1,599.90	16.24	3.22	16.25	0.09	0.09	1.17
1,700.00	0.45	37.26	1,699.90	17.04	3.54	17.05	0.26	-0.11	26.67
1,800.00	0.40	29.33	1,799.90	17.65	3.95	17.66	0.08	-0.05	-7.93
1,900.00	0.30	36.36	1,899.89	18.17	4.28	18.18	0.11	-0.10	7.03
2,000.00	0.19	62.51	1,999.89	18.46	4.58	18.47	0.15	-0.11	26.15
2,100.00	0.27	65.54	2,099.89	18.63	4.94	18.64	0.08	0.08	3.03
2,200.00	0.20	34.70	2,199.89	18.87	5.26	18.89	0.14	-0.07	-30.84
2,292.00	0.29	313.03	2,291.89	19.16	5.18	19.18	0.36	0.10	-88.77
VES Gyro Tie-in									
2,339.00	0.30	318.00	2,338.89	19.33	5.01	19.35	0.06	0.02	10.57
First Phoenix MWD Survey									
2,370.00	0.40	338.90	2,369.89	19.50	4.91	19.51	0.52	0.32	67.42
2,401.00	0.30	341.20	2,400.89	19.67	4.85	19.69	0.33	-0.32	7.42
2,433.00	2.10	24.40	2,432.88	20.29	5.06	20.30	5.91	5.63	135.00
2,464.00	6.20	14.90	2,463.79	22.42	5.73	22.44	13.37	13.23	-30.65
2,495.00	9.80	8.20	2,494.49	26.65	6.54	26.67	11.98	11.61	-21.61
2,526.00	12.60	4.10	2,524.89	32.64	7.16	32.66	9.38	9.03	-13.23
2,557.00	15.00	2.20	2,555.00	40.02	7.55	40.04	7.88	7.74	-6.13
2,588.00	18.70	1.80	2,584.86	49.00	7.86	49.02	11.94	11.94	-1.29
2,620.00	22.50	2.10	2,614.61	60.25	8.25	60.27	11.88	11.88	0.94
2,651.00	25.40	1.80	2,642.94	72.82	8.67	72.85	9.36	9.35	-0.97
2,682.00	28.10	1.00	2,670.62	86.77	9.01	86.80	8.79	8.71	-2.58
2,714.00	31.30	359.40	2,698.41	102.62	9.05	102.65	10.30	10.00	-5.00
2,745.00	34.10	357.30	2,724.50	119.36	8.56	119.38	9.74	9.03	-6.77
2,777.00	37.10	356.00	2,750.51	137.95	7.46	137.97	9.67	9.38	-4.06
2,808.00	40.80	355.60	2,774.62	157.38	6.03	157.40	11.96	11.94	-1.29
2,840.00	44.00	356.50	2,798.24	178.91	4.55	178.92	10.18	10.00	2.81
2,871.00	46.30	357.40	2,820.11	200.85	3.39	200.86	7.70	7.42	2.90
2,902.00	49.20	358.30	2,840.95	223.78	2.53	223.79	9.60	9.35	2.90
2,933.00	52.70	358.60	2,860.47	247.84	1.88	247.85	11.32	11.29	0.97
2,964.00	55.70	358.20	2,878.61	272.97	1.18	272.97	9.73	9.68	-1.29
2,995.00	58.10	358.60	2,895.53	298.93	0.45	298.93	7.82	7.74	1.29
3,026.00	60.50	0.30	2,911.36	325.58	0.20	325.58	9.06	7.74	5.48
3,058.00	62.70	1.40	2,926.58	353.72	0.62	353.72	7.51	6.88	3.44
3,088.00	65.30	1.50	2,939.73	380.68	1.31	380.68	8.67	8.67	0.33
3,120.00	67.70	2.20	2,952.49	410.00	2.25	410.01	7.76	7.50	2.19
3,152.00	70.90	1.80	2,963.80	439.92	3.30	439.92	10.07	10.00	-1.25



Phoenix Technology Services
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #10H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3481.00ush (Silver Oak 3)
Site:	Noose Federal Com	MD Reference:	KB @ 3481.00ush (Silver Oak 3)
Well:	#10H	North Reference:	Grid
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Design:	Surveys (Silver Oak 3)	Database:	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)
3,183.00	74.90	1.00	2,972.91	469.53	4.02	469.54	13.14	12.90	-2.58
3,215.00	79.60	0.60	2,979.97	500.73	4.45	500.74	14.74	14.69	-1.25
3,246.00	82.60	0.70	2,984.77	531.35	4.80	531.36	9.68	9.68	0.32
3,277.00	85.10	1.10	2,988.09	562.17	5.29	562.18	8.17	8.06	1.29
3,327.00	89.60	1.30	2,990.40	612.09	6.33	612.11	9.01	9.00	0.40
3,421.00	90.10	1.50	2,990.65	706.06	8.63	706.08	0.57	0.53	0.21
3,515.00	90.20	1.70	2,990.40	800.02	11.25	800.05	0.24	0.11	0.21
3,609.00	90.90	0.40	2,989.50	894.00	12.98	894.04	1.57	0.74	-1.38
3,703.00	91.20	359.40	2,987.78	987.98	12.81	988.02	1.11	0.32	-1.06
3,796.00	91.40	359.30	2,985.67	1,080.95	11.76	1,080.98	0.24	0.22	-0.11
3,890.00	90.90	358.80	2,983.78	1,174.92	10.20	1,174.95	0.75	-0.53	-0.53
3,984.00	90.20	358.50	2,982.88	1,268.89	7.98	1,268.91	0.81	-0.74	-0.32
4,078.00	90.20	359.10	2,982.55	1,362.87	6.02	1,362.88	0.64	0.00	0.64
4,172.00	90.50	359.10	2,981.97	1,456.86	4.54	1,456.86	0.32	0.32	0.00
4,265.00	90.60	359.80	2,981.08	1,549.85	3.65	1,549.85	0.76	0.11	0.75
4,358.00	90.90	359.80	2,979.86	1,642.84	3.32	1,642.84	0.32	0.32	0.00
4,452.00	91.30	359.60	2,978.06	1,736.82	2.83	1,736.82	0.48	0.43	-0.21
4,545.00	91.50	359.60	2,975.79	1,829.79	2.18	1,829.79	0.22	0.22	0.00
4,639.00	90.90	0.40	2,973.82	1,923.77	2.18	1,923.76	1.06	-0.64	0.85
4,733.00	90.50	1.00	2,972.67	2,017.75	3.33	2,017.75	0.77	-0.43	0.64
4,826.00	90.20	0.90	2,972.10	2,110.74	4.87	2,110.74	0.34	-0.32	-0.11
4,920.00	89.90	1.00	2,972.02	2,204.72	6.43	2,204.73	0.34	-0.32	0.11
5,014.00	89.70	0.40	2,972.35	2,298.72	7.58	2,298.73	0.67	-0.21	-0.64
5,108.00	89.20	360.00	2,973.25	2,392.71	7.91	2,392.72	0.68	-0.53	-0.43
5,201.00	89.80	0.10	2,974.06	2,485.71	7.99	2,485.72	0.65	0.65	0.11
5,295.00	90.40	0.30	2,973.90	2,579.71	8.32	2,579.72	0.67	0.64	0.21
5,389.00	91.10	359.50	2,972.67	2,673.70	8.15	2,673.71	1.13	0.74	-0.85
5,483.00	91.80	359.60	2,970.29	2,767.66	7.41	2,767.67	0.75	0.74	0.11
5,576.00	90.60	359.90	2,968.34	2,860.64	7.01	2,860.65	1.33	-1.29	0.32
5,670.00	91.10	0.60	2,966.95	2,954.63	7.42	2,954.64	0.92	0.53	0.74
5,764.00	91.30	0.80	2,964.98	3,048.60	8.57	3,048.61	0.30	0.21	0.21
5,857.00	91.90	1.00	2,962.38	3,141.55	10.03	3,141.57	0.68	0.65	0.22
5,950.00	91.80	1.10	2,959.38	3,234.49	11.73	3,234.51	0.15	-0.11	0.11
6,044.00	90.30	0.40	2,957.66	3,328.46	12.96	3,328.48	1.76	-1.60	-0.74
6,138.00	90.10	360.00	2,957.33	3,422.46	13.29	3,422.48	0.48	-0.21	-0.43
6,231.00	89.40	359.60	2,957.73	3,515.46	12.96	3,515.48	0.87	-0.75	-0.43
6,324.00	88.80	359.10	2,959.20	3,608.44	11.91	3,608.46	0.84	-0.65	-0.54
6,419.00	89.10	358.40	2,960.94	3,703.40	9.84	3,703.41	0.80	0.32	-0.74
6,513.00	89.40	358.90	2,962.17	3,797.36	7.62	3,797.37	0.62	0.32	0.53
6,606.00	90.10	359.40	2,962.57	3,890.35	6.24	3,890.35	0.92	0.75	0.54
6,699.00	91.10	359.70	2,961.60	3,983.34	5.51	3,983.34	1.12	1.08	0.32
6,792.00	91.20	1.20	2,959.73	4,076.32	6.24	4,076.32	1.62	0.11	1.61
6,886.00	91.20	1.00	2,957.76	4,170.28	9.05	4,170.29	0.21	0.00	-0.21
6,980.00	90.70	1.10	2,956.20	4,264.25	9.77	4,264.26	0.54	-0.53	0.11



Phoenix Technology Services
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #10H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3481.00usft (Silver Oak 3)
Site:	Noose Federal Com	MD Reference:	KB @ 3481.00usft (Silver Oak 3)
Well:	#10H	North Reference:	Grid
Wellbore:	WB1/Job #1411086	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	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)
7,074.00	90.20	1.60	2,955.47	4,358.22	11.98	4,358.24	0.75	-0.53	0.53
7,167.00	89.60	1.50	2,955.63	4,451.19	14.50	4,451.21	0.65	-0.65	-0.11
7,261.00	89.80	1.30	2,956.12	4,545.16	16.80	4,545.19	0.30	0.21	-0.21
7,354.00	90.10	1.30	2,956.20	4,638.13	18.91	4,638.17	0.32	0.32	0.00
7,438.00	90.40	1.10	2,955.84	4,722.12	20.66	4,722.16	0.43	0.36	-0.24
Last Phoenix MWD Survey									
7,498.00	90.40	1.10	2,955.42	4,782.10	21.82	4,782.15	0.00	0.00	0.00
Projection to TD									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
2,292.00	2,291.89	19.16	5.18	VES Gyro Tie-in
2,339.00	2,338.89	19.33	5.01	First Phoenix MWD Survey
7,438.00	2,955.84	4,722.12	20.66	Last Phoenix MWD Survey
7,498.00	2,955.42	4,782.10	21.82	Projection to TD

Checked By: _____ Approved By: _____ Date: _____